

California M E D I C I N E

OFFICIAL JOURNAL OF THE CALIFORNIA MEDICAL ASSOCIATION

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Volume 86

FEBRUARY 1957

Number 2

Repair of Intracardiac Defects

Operation Under Direct Vision with the Aid of Hypothermia or a Pump-Oxygenator; Report of Twelve Cases

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THE SURGICAL treatment of congenital heart disease has been limited by the fact that the surgeon has been unable to operate under direct vision on the structures within the heart. Cardiac operations in the past have been restricted to indirect procedures on the great vessels or to "blind" instrumentation performed through the walls of the heart. The development of techniques for open cardiomy has made possible the surgical correction of previously inoperable congenital defects. The purpose of this discussion is to present the initial results with open cardiomy performed with the aid of hypothermia or a pump-oxygenator in 12 patients.

The investigators currently working in the field of extracorporeal circulation owe much to the fundamental studies performed over the last 17 years by Gibbon and co-workers.^{6-9,16} The clinical application of pump-oxygenators has been reported by Gibbon,¹⁰ Dodrill⁵ and Dennis and co-workers.³ During this developmental period Lillehei and co-workers¹² reported extensive clinical experience with the donor

• The repair of intracardiac defects under direct vision by opening the heart to expose the operative field, with the aid of hypothermia or a pump-oxygenator, is now a practical clinical method. Twelve patients were operated upon by this method. In eight patients an atrial septal defect was repaired during total circulatory occlusion under hypothermia. The seven patients in this group who had uncomplicated atrial defects survived the operation and are doing well after a short follow-up period. One patient with an unrecognized, associated ventricular defect died at the time of operation.

Four patients were operated upon during total cardiac by-pass with the DeWall bubble-oxygenator. The first three patients survived operation and are continuing to do well after a brief follow-up period. In the fourth patient an atrioventricularis communis was repaired by the reconstruction of an atrial and ventricular septum with a plastic prosthesis. This patient died at the end of operation.

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The construction of the pump-oxygenator was made possible through the generous help of the Valley Heart Fund. The investigative studies preliminary to the use of open cardiac surgery were supported by grant-in-aid H-882, United States Public Health Service.

Presented before the Section on General Surgery at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

circulation method. Swan and Zeavin¹⁷ successfully employed circulatory interruption under hypothermia in a large series of cases. In recent months, open operations on the heart with the aid of cardiac by-pass utilizing a pump-oxygenator have been placed on a practical clinical basis by Lillehei and co-workers¹⁴ and by Kirklin and associates.¹¹

EXPERIMENTAL STUDIES

Profiting by the reports of other groups of investigators, the authors began a study of the recognized techniques of cardiac by-pass. Animals were studied during cardiac by-pass employing either a perfusion reservoir,¹³ a biological oxygenator employing homologous lungs¹³ or the DeWall oxygenator.^{4,14} Extensive studies with open cardiectomy during circulatory interruption under hypothermia were also performed. Biochemical, physiologic and survival data were accumulated with each of these methods. A definite evaluation of the relative merits of the various methods is not pertinent to the present discussion. Two of the methods, however, appeared sufficiently satisfactory under experimental conditions to warrant their application to man. The clinical experience to be reported here is concerned with the use of hypothermia and the DeWall oxygenator.

HYPOTHERMIA

The experience with the closure of atrial septal defects in this clinic in 34 patients has been reported.¹⁵ There were two deaths in this series and the last 25 patients were operated upon without mortality. Complete closure of the defects, however, was not achieved in all the cases because of the size, location or multiplicity of defects. For this reason, attention was directed to the direct method of closure with circulation occluded.

Eight patients were operated upon with the following technique. After the induction of anesthesia, body cooling to 25°C. to 28°C. was achieved by application of ice packs. The patient was then prepared for bilateral anterior thoracotomy. The right hemithorax was opened, and an exploration of the right auricle was carried out by inserting the index finger through the right atrial appendage. In the past if the defect was small and suitably located, closure by atrioseptopexy was done.^{1,2} If it appeared that the defect could not be completely closed by this method, the circulation was interrupted and the defect was closed under direct vision.

Currently, an open method of repair is preferred. After closure of the incision in the heart and reestablishment of circulation, cardiac massage is employed if spontaneous myocardial contractions are judged to be inadequate. If ventricular fibrillation occurs, defibrillation by electric shock is performed after a period of vigorous cardiac massage.

Seven of the patients were found to have uncomplicated atrial defects. All recovered satisfactorily and were discharged from the hospital in the second postoperative week. In one patient who had a 10-minute period of circulatory interruption, there was a suggestion of disturbed sensorium for a period of several hours following operation. The remainder of the postoperative course was uncomplicated.

The operative procedure in the eighth case proceeded in the usual manner until the circulation was restored. Despite the fact that circulatory interruption lasted only 3 minutes and 25 seconds, recovery of cardiac action was slow. Cyanosis of the myocardium and poor muscle tone suggested inadequate coronary flow. After a prolonged attempt at resuscitation, the patient died. Autopsy showed satisfactory closure of the septal defect, but there was a large associated interventricular defect. It was apparent that resuscitation was unsuccessful because the left ventricular output was shunted through the interventricular defect into the low resistance pulmonary circulation, thus producing inadequate systemic and coronary flow.

During the performance of these operations by the open technique, the disadvantages of the closed, or "blind," methods became obvious. In three of the patients, the interatrial defect extended from 1.0 to 1.5 cm. below the orifice of the inferior vena cava. Even under direct vision, considerable difficulty was encountered in closing the inferior portion of the defect which was located on the posterior wall of the vena cava. An attempt to close these defects by atrioseptopexy would have resulted either in incomplete closure or the inadvertent shunting of blood from the inferior vena cava into the left auricle (see Case 2).

The closure of atrial defects under hypothermia is not without disadvantages. Complete circulatory stasis under hypothermia with elimination of coronary perfusion may bring about poor myocardial tone and ventricular fibrillation. Although all seven of the patients with uncomplicated atrial defect were resuscitated satisfactorily, arrhythmia and poor cardiac action were a constant source of concern. Another distinct disadvantage lies in the fact that it is unsafe to interrupt circulation for longer than ten minutes. The case of a two-year-old girl with the clinical and laboratory findings characteristic of atrial septal defect illustrates this point well. On exploratory myocardiectomy, the patient was found to have a defect of ostium primum type. In the judgment of the surgeon, the defect could not be closed by direct suture because of its large size and because of the danger of damaging the function of the tricuspid and mitral valves. A plastic prosthesis of Ivalon sponge was available, but it was estimated that inserting it would require occlusion of the circulation for more than ten minutes. Definitive treatment of the atrial defect was deferred, therefore, until operation with an extracorporeal pump-oxygenator could be performed.

PUMP-OXYGENATOR

Four patients were operated upon with the heart open and total cardiac by-pass carried out with the

DeWall pump-oxygenator. Use of this apparatus has previously been described by Lillehei and associates.¹⁴ The essential parts of the device consist of (1) two catheters draining superior and inferior vena cavae, (2) a venous reservoir, (3) a venous pump, (4) an oxygen dispersion unit, (5) a defoaming unit,[†] and (6) an arterial reservoir. From this reservoir oxygenated blood is pumped through a filter and bubble trap to the patient by way of an arterial cannula in the left subclavian artery.

All portions of the device in contact with blood are made of vinylplastic* or nonreactive metal. Propulsion of the blood is accomplished with two independently operating sine wave pumps powered by electric motors and controlled by a variable speed gear box.[‡] The filter and bubble trap is constructed of block lucite and contains a stainless steel filter screen.

The pump-oxygenator is prepared for use by priming with 1,000 cc. of freshly-drawn, heparinized, arterialized blood. A mixture of 95 per cent O₂ and 5 per cent CO₂ is used in the dispersion chamber. The gas is partially humidified.

After the usual preanesthetic medication, the patient is anesthetized with cyclopropane. The chest is prepared and draped for bilateral, anterior thoracotomy through the fourth interspace. Multichannel recording oscillographs are used to make continuous tracings of arterial pressure (right ulnar artery), electrocardiogram, electroencephalogram and body temperature. Cathode-ray oscilloscopes are used to monitor the electrocardiogram and electroencephalogram during the operation. The anesthesiologist and operating team, therefore, have within sight at all times evidence of myocardial and cerebral function. Medications and blood replacement are given through the long saphenous vein.

The thorax and pericardium are then opened. The auricular septum is explored with a finger inserted through the right auricular appendage to rule out any unsuspected, associated auricular defect. The left subclavian artery is then occluded at the aorta, ligated distally, and divided. An arterial cannula of appropriate size is tied in place in this artery, and the patient is thereby connected to the arterial side of the pump-oxygenator. The vena cavae are isolated, and a catheter is inserted in each vessel through separate stab wounds in the right atrial wall. Just prior to the insertion of the venous catheters, the patient is given a single intravenous dose of heparin (1.5 mg. per kilogram of body weight). The vena cavae are occluded, and the previously calibrated pump is started with a delivery rate of 30 ml. to 40 ml. per kilogram of body weight per minute. Cardiot-

omy is then performed and the defect repaired under direct vision. The myocardial wall is closed with two continuous layers of 0000 artificial silk. The vena cavae are released and the pump-oxygenator discontinued. At this time protamine is given in a dosage of 2.0 mg. per kilogram of body weight. At the termination of the procedure the patient is reweighed. Changes in weight are considered to reflect changes in blood volume, and this information is used as a guide for restoring normal blood volume.

CASE REPORTS

CASE 1. The patient, a ten-month-old, white, mongoloid girl, weighing 6.5 kilograms, had been repeatedly hospitalized for respiratory infections and pneumonia. A diagnosis of acyanotic, congenital heart disease was made at the age of two months. Radiographs showed cardiomegaly and pulmonary congestion. Electrocardiograms indicated right ventricular hypertrophy. Cardiac catheterization showed an increase in oxygen saturation of blood in the right ventricle and in the pulmonary artery suggestive of interventricular defect or patent ductus arteriosus.

A bilateral transsternal thoracotomy in the fourth interspace was performed. When the right atrium was explored digitally there was some question as to whether there might be a fenestrated auricular septal defect. Total cardiac by-pass was carried out for a period of 18 minutes while right ventriculotomy was performed. No ventricular defect was found, but it was possible to visualize and suture a fenestrated atrial defect by working through the tricuspid valve. The fenestrated nature of the lesion explained why it had not been palpable with certainty on the auricular exploration. The patient recovered without difficulty and was discharged on the sixteenth postoperative day.

CASE 2. The patient, a six-year-old white boy weighing 20 kilograms, had been admitted to another hospital in November, 1954, with a history of retarded physical development, frequent respiratory infections, easy fatigability and cyanosis on exertion. He entered this hospital in July, 1955, and was found to have a Grade III systolic murmur, loudest at the apex, and pronounced accentuation of the pulmonary second sound. Radiographs showed pulmonary vascular engorgement. Right axis deviation and right ventricular hypertrophy were indicated by electrocardiogram tracings. Upon cardiac catheterization the findings were characteristic of atrial septal defect.

On August 11, 1955, atrioseptopexy was performed. The symptoms persisted and the patient became more cyanotic during the seven months after operation. It was considered likely that the attempt to repair the low-lying atrial defect by the atrioseptopexy method had resulted in diverting the inferior vena caval flow into the left auricle, hence the increased cyanosis.

[†]The defoaming agent (Antifoam-A) was generously supplied by the Dow Corning Corp., Midland, Michigan.

*Mayon Plastics, 781 N. Washington, Minneapolis, Minnesota.

[‡]Sigma Motor, Inc., Middleport, New York.

The patient was readmitted to the hospital, and on March 21, 1956, he was prepared for operation under hypothermia, and for cardiac by-pass if necessary. Bilateral thoracotomy revealed the previously unrecognized fact that the superior pulmonary vein on the left side was anomalous and emptied into the innominate vein. The anomalous pulmonary vein was transected and anastomosed to the left auricular appendage. The left inferior pulmonary vein passed posterior to the heart and appeared to join the inferior vena cava just below its junction with the right auricle. Because the previously performed atrioseptopexy would complicate the attempt to repair the atrial defect, it was decided that hypothermia would not permit adequate operating time within the heart. The pump-oxygenator, therefore, was employed to perform cardiac by-pass for a period of ten minutes. The atrioseptopexy was found to have shunted a portion of the inferior vena caval flow into the left auricle. The septal defect extended 1.5 cm. inferiorly into the vena cava, and it was apparent that satisfactory repair of this lesion could not have been done without opening the area to view. The atrioseptopexy was taken down and the atrial defect closed by direct suture.

The postoperative course was complicated by respiratory deficiency and two episodes of cardiac failure. On the third postoperative day, tracheotomy was performed to permit endotracheal suction. The patient slowly improved and was discharged after one month in the hospital.

CASE 3. The patient was a ten-month-old, white boy who weighed 5.8 kilograms. There was a history of poor weight gain, of cardiomegaly and of a heart murmur since the age of three months. Cardiac catheterization and angiograms gave findings indicative of a ventricular septal defect. Radiographs showed increased pulmonary vascularity, and an electrocardiogram was characteristic of left ventricular hypertrophy.

A total cardiac by-pass was performed for a period of 13 minutes and 45 seconds. Under direct vision a suture repair of a high interventricular septal defect was carried out through a right ventriculotomy. The postoperative course was benign, and the patient was discharged on the 20th postoperative day.

CASE 4. The patient was a seven-month-old, white boy weighing 5 kilograms, who had had repeated episodes of cardiac failure. Cardiac catheterization was carried out at another hospital when the patient was four months old and again at the age of seven months at this hospital. The findings on both occasions suggested the presence of an atrioventricularis communis. The patient did poorly despite continuous hospitalization at this and other hospitals. After a period of one month of observation, it was elected to attempt a repair of the atrioventricularis communis under total cardiac by-pass.

On April 11, 1956, operation was performed. During exploration, cardiac arrest occurred. Following resuscitation of the heart, it was debated whether

the procedure should be continued. In view of the poor prognosis without operation, it was elected to attempt repair with the pump-oxygenator. The diagnosis of atrioventricularis communis was confirmed, the defect consisting of the absence of the lower part of the atrial septum and a major part of the ventricular septum. The remnant of the ventricular septum was so small that there was, in essence, a single ventricle. Cardiac by-pass was maintained for 37 minutes. The remaining portion of the atrial septum was pulled down between the two atrioventricular valves, and the remainder of the defect was closed with a circular disc of Ivalon sponge 2.0 cm. in diameter and 0.3 cm. in thickness. The procedure was technically satisfactory. After closure of the ventricle, the heart responded poorly. Periods of second and third degree heart block alternated. It was noted that with cardiac massage it was impossible to get a directly measured systolic arterial pulse of greater than 40 mm. of mercury. The patient died after prolonged resuscitative effort.

At autopsy examination there was at least one obvious reason for the patient's death. Although the surgical procedure resulted in the creation of two ventricular chambers, this division was functionally inadequate. The pronounced right ventricular hypertrophy and dilatation characteristic of atrioventricularis communis were easily demonstrable. The estimated volume of the right ventricular chamber was 30 cc. and that of the left ventricular chamber was 8 cc. It was apparent that before the closure of the ventricular defect the right ventricle had been playing a large role in maintaining the systemic circulation. The fact that the left ventricle had a volume of only a few milliliters may explain why cardiac massage could not be made to produce a systolic pressure of greater than 40 mm. of mercury.

DISCUSSION

At present the indications for the use of cardiac operations in which the operative field is exposed to view are not well defined, since it is not possible to compare the mortality of the operative procedure with the mortality resulting from the natural history of the disease being treated. It is quite possible, however, that as the operations of exposure become safer, operations which are now performed by the closed or "blind" methods may be carried out more effectively and with equal safety. On the basis of the authors' experience with exposed heart operations in the treatment of atrial defects, it is possible to draw one definitive conclusion: Not all atrial defects, particularly those located at and below the orifice of the inferior vena cava and those of the ostium primum type, can be repaired satisfactorily by the closed methods now available. Even open operation under hypothermia is not always ideal, since it does not give adequate time to insert plastic prostheses

when they are required. For this reason, when pump-oxygenators are further refined, total by-pass may become the method of choice for repair of these atrial lesions.

The present policy of the authors concerning the surgical treatment of ventricular septal defect is one of cautious conservatism. It is well known that many of these defects are compatible with a long and healthy life. The prognosis appears to depend chiefly upon the size of the defect and the individual's response to a prolonged increase in pulmonary blood flow. This increase which is characteristic of ventricular septal defect eventually produces pathologic changes in the pulmonary vasculature and severe pulmonary hypertension. When pulmonary vascular resistance becomes sufficiently elevated, the shunt through the ventricular defect reverses and the patient becomes cyanotic.

It is already well recognized that patients in whom reversed shunts develop through communications between the right and left sides of the heart or great vessels have a poor prognosis. It is essential, therefore, that patients with ventricular septal defect be operated upon before severe hypertension occurs. Our present policy is to consider for operation only those patients who have repeated episodes of cardiac failure and a moderate to severe degree of pulmonary hypertension, and who do not respond satisfactorily to a medical program. Since rapid progress is being made in operations with pump-oxygenators used to maintain circulation, it seems likely that the operative mortality will decrease over the next year or two. Any patient, therefore, on whom operation can be postponed without jeopardy will do well to wait. The four patients reported upon herein were chosen for operation because it was believed they could not live long enough to benefit from any technical advances that might be made in pump-oxygenators. Patients should always be selected for operation with caution, but all of them should have the benefit of a thorough diagnostic evaluation in the hope that their lesions are such that operation can help.

In addition to ventricular defects, there are a number of other lesions that may eventually be treated best by open cardiectomy with the pump-oxygenator. Ostium primum defects, atrioventricularis communis, single ventricle, and transposition of the great vessels are examples of such anomalies.

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ACKNOWLEDGMENT

The authors wish to acknowledge with gratitude the assistance given them by Doctors Richard A. DeWall, Richard L. Varco, C. Walton Lillehei, and John H. Gibbon, Jr.

The technical assistance of James Arzouman, Chester Chalberg, and Guy Kimball is gratefully acknowledged.

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Radiation of Pelvic Malignant Disease

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IN CONSIDERING any such topic as the radiation therapy of pelvic malignant disease, it is well to start by acknowledging two facts: First, that the therapeutic use of irradiation is still involved in the management of the overwhelming majority of pelvic malignant lesions and, second, that the age of the isotope is permanently with us from the point of view of therapy. The conclusion from these two premises is that we have been thrust into the position of having a considerable number of new agents and modalities with which we must, of necessity, become acquainted from the point of view of their limitations and potentialities. Our situation is not unlike that of the internist who originally had only regular insulin available for diabetic patients, and suddenly acquired protomine zinc insulin and a wide variety of other therapeutic weapons. Each of these had in common the ability to control the blood sugar, yet each has distinct differences, and various combinations of the available agents are indicated for various individual patients.

Many of the new sources of irradiation cannot as yet be judged from the point of view of their final results. Actually, however, there is no great reason at present to assume that the new sources of irradiation will significantly alter the cure rate. To return to the analogy with the newer forms of insulin, no more diabetic persons have had the disease controlled, although the control has been rendered simpler, safer and more precise. Accordingly, in the present discussion it is proposed to consider potentialities and indications rather than to present any detailed survey meticulously comparing five-year cure rates.

CARCINOMA OF THE CERVIX

It remains true that the revival of interest in the surgical attack on carcinoma of the cervix has brought about a salvage rate equal to but no better than that achieved with irradiation therapy in comparable cases. The primary surgical attack, furthermore, is limited to League of Nations Stage I lesions and in most clinics only to a selected group of such patients. This leaves the majority of patients with carcinoma of the cervix that was invasive when first diagnosed committed to irradiation. The objectives

• At present, progress in the treatment of cancer consists of more extensive excision or more thorough irradiation.

The cure rate of pelvic cancer is proportionate not so much with the form of therapy used as with the stage of the disease when first diagnosed.

Any woman who consults a physician should have a pelvic examination regardless of the presence or absence of pelvic symptoms.

of such therapy are to produce an even blanket of irradiation across the pelvis, achieving a cancerocidal dose at all points. It is of importance to restate this objective only because over the years there has so often been a tendency to slip into the habit of administering intensive irradiation to the cervix and the immediate paracervical region, and to administer inadequate therapy to the lateral pelvic walls. The lateral wall is the first site of spread of cervical carcinoma, and cervical carcinoma is a lesion that is always further ahead of us than we think. Individual modalities of treatment are less important than this over-all objective of cancerocidal doses at all points; and against this objective each technique should be evaluated.

The weapons available include first of all x-ray for external therapy, and here the pattern of our thinking has been changed most significantly by the introduction of the supervoltage forms—the two million volt tube or the Van der Graf accelerator. There can be little doubt, reviewing the preliminary reports of the results of such therapy in gynecologic malignant disease, that the skin-sparing action associated with the increased voltage levels is a definite benefit. At present in the gynecologic clinic of Western Reserve University School of Medicine, external therapy which formerly delivered between 3,500 and 4,000 roentgens to the midpelvic plane is now delivering between 4,500 and 5,000 roentgens uniformly across the midpelvis. It must be acknowledged, however, that this skin-sparing benefit is perhaps less impressive with regard to the pelvic lesions than in those of the chest or neck, for as the dosage to the midpelvic level increases, the morbidity in the other pelvic viscera likewise increases. In patients observed by the author, bowel morbidity has been the most conspicuous change and has shown an increase of at least 25 per cent with the increased dosage level. In place of the top limitation imposed by skin tolerance, top limitation imposed by

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Guest Speaker's Address: Presented before the Section on Obstetrics and Gynecology at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

the patients' general systemic tolerance and by the local bowel reactions to these dosages are now not infrequently encountered.

The ability to increase the dosage to the side wall by 1,000 to 1,500 roentgens, however, has sharply limited the need for the other techniques which have been employed to raise the dosage in the nodal region. Thus the interstitial colloidal gold sponsored by Sherman and the nylon thread technique for the use of cobalt are perhaps less necessary with the approach to therapy available.

Radium

Radium remains the standby for central pelvic therapy and for achieving the high dosages to the cervix itself and to Point A. There has undoubtedly been a rise in recent years in the interstitial use of radium, and modifications of the Corscaden pattern are frequent. Much of this has been achieved by a reduction of the intensity of the individual sources, thus reducing the immediate reaction and necrosis around each needle, while relying on the crossfire of the various needles to create a field of adequate intensity within the fire pattern. In such circumstances the dosage delivered to the neighboring structures falls off sharply outside the pattern.

Cobalt

Cobalt⁶⁰ as a therapeutic weapon is undoubtedly here to stay in one form or another. It has a half life of 5.3 years and emits two gamma rays of 1.1 and 1.4 million electron volts intensity. It has an exceedingly weak beta ray, and heavy shielding to guard against beta-ray damage is not necessary. It is insoluble and inert if it should come in contact with body fluid or tissues, it can be activated in any desired shape, and it remains relatively inexpensive.

Radioactive cobalt has found its principal therapeutic application in two quite distinct forms. The first of these is the cobalt bomb—a mass of activated cobalt held in a special unit which directs the beam of the gamma rays much as x-rays would be directed from a therapy machine. In this form cobalt is used as a substitute for x-ray and studies of its gamma ray strength as compared to the output of a two million volt x-ray tube would indicate that the two are approximately equivalent. In other words the cobalt bomb can be considered as the roentgenologic equivalent of a supervoltage x-ray machine of a two million volt equivalent dosage level. It will have all of the drawbacks of external supervoltage and all of the advantages of such therapy. It will need periodic reactivation and has the technical disadvantage that it is emitting its beam all the time, whereas the x-ray tube is emitting its beam only when it is turned on.

Cobalt⁶⁰ has also been used as a radium substitute in various modalities for transvaginal application. When it is used in this way, the particularly attrac-

tive features are the ease in handling it and the lack of necessity for heavy filtration to remove the beta ray. Gone is the concept of the platinum and gold filters necessary with radium; containers of extraordinary fineness can be employed. Not only has it been used in colpostat and tandem therefore, but, with the advantage of these characteristics, has received considerable attention for various forms of interstitial therapy. The light aluminum needle which can be trimmed in length to suit the needs of the pelvis and the tumor distribution; the steel needle which in bulk is considerably smaller than the equivalent radiation strength of radium, or even the encasement of the cobalt portions in nylon tubing to be sewn into the tumor—these are examples of advantages in interstitial therapy.

Gold

Au¹⁹⁸ has properties that are quite distinct from cobalt. It has a half life of only 2.7 days, which immediately complicates the problem of getting the irradiated material from the reactor to the patient without loss of too much strength. For an institution to "keep gold on hand" in the same way that it can keep cobalt readily available is virtually impossible, since at the end of a week to ten days the strength of any given lot, so far as effectiveness is concerned, is completely gone. Radioactive gold emits but one gamma ray which is of a low degree of penetrability, and a beta ray with a high electron voltage spectrum. In its colloidal form it is relatively easily handled, it is inert in the body tissues, is insoluble, and can be activated in considerable quantities without significant cost.

Sherman and co-workers suggested the direct injection of Au¹⁹⁸ into the paracervical regions for treatment of cervical carcinoma. The colloidal particles are picked up by the lymphatic chains of the area and carried to the lateral pelvic walls, where the nodes concentrate the multiple sources of irradiation. That it can effectively alter the nodes morphologically has been demonstrated, but it still remains true that the physics of this type of therapy is of necessity approximate. With the half life declining rapidly as the sources of irradiation move toward their ultimate goal, and with the tissue volume being treated not completely known, any calculation of tissue roentgens delivered must be at best an educated guess. These difficulties may well be overcome, but at present the interstitial injection of radioactive colloidal gold in the therapy of carcinoma of the cervix remains a matter for study rather than for wide application.

CARCINOMA OF THE FUNDUS AND CORPUS OF THE UTERUS

In sharp contrast to the situation with carcinoma of the cervix, the primary attack on fundal carci-

noma remains surgical. Radiation therapy finds its place either for therapy of inoperable lesions where a full course treatment must be given around the pelvis and within the uterus, or as a preliminary to hysterectomy. The motives for such presurgical treatment by intercavitary irradiation are not always easy to define. Since the tumor can implant by direct seeding, probably the greatest benefit that is achieved by pretreatment with sources of radiation is to render the malignant cells temporarily incapable of such implantation and thereby reduce the risk of local seeding at the time of hysterectomy.

It is important to define the motive for this presurgical radiation therapy because it will influence both the dosage schedules and the forms of therapy employed. If the foregoing statement of motives is an accurate postulation of the reasoning behind the prehisterectomy therapy with intercavitary irradiation, then it should be possible to reduce the dosages significantly provided radiation is distributed uniformly within the uterus. Thus, Kotmeyer advocated a considerably smaller dosage of irradiation for fundal carcinoma than that customarily used in this country, and it is probable that delivering 1,200 roentgens at 0.5 cm. distance beneath the endometrial surface should be sufficient to achieve such an objective. The one prerequisite for such a dosage schedule would be a uniform application of the irradiation throughout the uterine cavity, and this can be achieved only by multiple sources packed within the uterus. The traditional application of a tandem of radium for a given number of "milligram hours" leads to local areas of sharp overdosage and other areas of pronounced undertreatment. Undoubtedly in some areas of the uterine cavity the desideratum of rendering the cells at least sick enough that they will not implant readily is more than successfully achieved, whereas in other areas the dosage is woefully inadequate for such a purpose.

In this connection Hendricks suggested the use of multiple cobalt sources in the form of beads which are strung together for packing into the uterine cavity. These can follow the contours of the most irregular uterus, giving an even field of irradiation over the entire endometrial surface. By using an inactive chain for preliminary packing and measurement of the capacity of the uterus, the total length of time that the operative team is exposed to irradiation is considerably reduced and this technique should improve the multiple source therapy of fundal carcinoma prior to hysterectomy.

CARCINOMA OF THE OVARY

Radiation therapy has no actual or logical place in the primary treatment of carcinoma of the ovary. It remains tragically true, however, that in so many

cases ovarian carcinoma has already penetrated the capsule of the tumor and implanted metastatically on the peritoneal surfaces at the time of the primary surgical attack that palliative irradiation remains necessary for the ultimate management of the patient. Since the area involved is so great, external sources of radiation—either from x-ray tube or from the cobalt bomb—usually render the patient exceedingly ill systemically without being able to achieve a cancerocidal dose at the midabdominal plane. For this reason, many efforts have been made to find a substitute for external x-ray therapy of metastatic ovarian carcinoma.

The intraperitoneal administration of radioactive colloidal gold is one of the best known of these attempts to palliate patients who have ascites and multiple peritoneal implants. It must be borne in mind that in these circumstances gold is not employed for its gamma ray therapy. Actually, the penetrability of the gamma ray is such that when the solution bathes the outside of the intestinal tract there are no evidences of mucosal burns inside the tract. With such minimal penetrability for the gamma rays (actually about 0.4 mm.) delivery of a cancerocidal dose of gamma roentgens into tumor nodules of any size cannot be expected. Actually, of course, in such a situation colloidal gold is being employed for its beta ray therapy. The strong beta ray burns the peritoneal surface, sclerosing it and reducing its ability to form ascitic fluid. This is palliation in its purest sense, but not to any degree therapy. The tumor continues to grow unabated and uncontrolled.

It would seem sensible, if the purpose of the gold here is to use its beta ray, to employ a pure beta emitter so that the gamma ray would present no problem at all. For this reason P_{32} was suggested, and experiments were carried out with chromic phosphate. In a few cases in which it was possible to obtain nodes from patients who had received this material intraperitoneally, however, as much as 20 per cent was accounted for outside the peritoneal cavity in nodal tissue or in bone, indicating some breakdown of the material.

It is impossible to conclude such a topic as this without two important reminders:

In the first place the topic of discussion here is new modalities in the treatment of gynecologic malignant disease, and it is well to remember that progress in treatment has nothing to do with progress in approaching the cure of cancer. At present, progress in the treatment of carcinoma consists of cutting it out more extensively or burning it more thoroughly. Neither of these implies, in any sense curative measures; and the cure of carcinoma will,

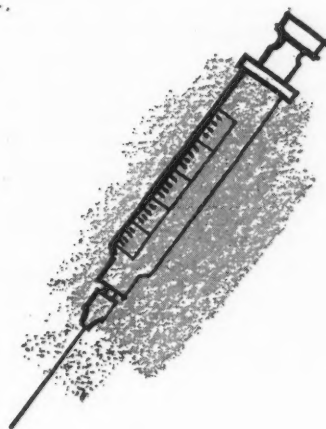
in all probability, be biochemical rather than radiologic.

The second point is, of course, that the cure rate of all of the lesions mentioned is, in the last analysis, proportionate not so much to the form of therapy employed as to the stage of the disease process when it is first diagnosed. The best means of radiologic treatment and the most skillful roentgen therapist remain earthbound by the clinical stage which the neoplasm has reached at the time treatment is started. To have any significant impact upon the national salvage rate for the gynecologic malignant diseases, we must diagnose them earlier. This means, for physicians, a high index of suspicion, an intelligent use of the diagnostic aids which are currently available and an increasing practice of prophylactic gynecology.

No therapy is any better than the diagnosis that precedes it, just as no diagnostic aid has been invented for the patient who stays at home. From the point of view of the physician, it is impossible to discharge a woman from one's practice; she must be given not a dismissal, but rather a return appointment.

Finally, the presence or absence of pelvic symptoms should have nothing to do with determining which patient should have a pelvic examination. If the patient has a pelvis and reaches the office, she should have a pelvic examination. This should be a universal rule—even if it subsequently turns out that she has come only to collect money for the Community Chest.

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Intervertebral Disc Lesions

Surgical Treatment, End Results, Disability Ratings and Cost in Industrial Accident Injuries

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THE INCREASING ATTENTION given in recent years to the question of insurance coverage for the expenses of sickness has caused the public and insurance companies to be more conscious of the cost of medical care. Hence, physicians are coming to consider medical services not only in relation to personal income but also from the standpoint of cost to insurance carriers, particularly in industrial accident injuries.

The symposium on intervertebral disc lesions here presented was suggested by a growing reluctance on the part of insurance carriers to accept liability for patients with intervertebral disc injuries or to authorize operative treatment. Particularly impressive is a contention by claim insurance carriers that operations for disc lesions resulted in a permanent disability of at least 25 per cent and that their average cost per case ran into several thousands of dollars, even though from a clinical evaluation excellent or good results had been obtained. The willingness of insurance companies to settle a case before operation by compromise and release for from two to three thousand dollars impressed the author that their conclusions might be well founded. Yet this high disability rating seemed unreasonable in view of excellent and good clinical results obtained by the author in a neurosurgical practice dealing with both industrial and private patients. A review of the end results in a series of industrial patients personally operated upon was therefore undertaken to determine: First, what were the results in compensation cases based on clinical findings? Second, were the disability costs as high as the insurance carriers said they were? Third, if results were found satisfactory from a clinical point of view but were only fair or poor as rated for compensation purposes, then why the discrepancy?

This report is based upon the surgical treatment of intervertebral disc lesions in 497 patients in the years 1946 to 1952 inclusive. In 98 cases the patients were covered by compensation laws and the cases were ultimately closed as without disability, or were reviewed and rated by the Industrial Accident Commission of the State of California. Information on

• In lumbar intervertebral disc operations there is sometimes pronounced disparity between the clinical results and the results as reflected in the disability rating given by the Industrial Accident Commission. It is believed that the difference must be due to excessive complaining and exaggeration on the part of the claimant and his representative before the Commission, and that undue credence and importance are given to these subjective symptoms as compared with the objective findings as reported by the surgeon or clinician. Data in the present study indicate that the belief that surgical decompression of a single nerve root and removal of an injured or degenerated disc necessarily entails a certain degree of disability is not justified. Satisfactory clinical results were obtained in 93 per cent of compensation cases, but when settled or rated by the Industrial Accident Commission, only 59 per cent were closed as having good or excellent results.

the final disability rating and the amount the insurance carrier paid for the partial or the total disability was obtained in 75 of the 98 cases. One insurance carrier reported on 34 cases, another on nine cases, a third on eight cases, and eleven other companies reported on from one to three cases each.

RESULTS—CLINICAL AND INDUSTRIAL

The following evaluation has currently been accepted: "Excellent" indicates the patient is cured, has no symptoms, has returned to work, and is entirely satisfied: From an industrial standpoint, the patient has no disability and receives no monetary award. "Good" implies the patient has a satisfactory relief of symptoms, can do his usual work but may have mild backache for which he will occasionally stop and rest: From a rating standpoint he will be considered to have a 20 per cent disability or less, for which he will receive approximately \$2,000. "Fair" indicates the patient is still having moderate symptoms related either to the spine or to the lumbosacral nerve roots, causing him to change to lighter work. He will be rated as having from 20 per cent to 50 per cent disability and will obtain an award of from \$2,000 to \$5,000. "Poor" indicates no improvement or that the patient is worse, is totally disabled,

Presented before a Joint Meeting of the Sections on Industrial Medicine and Surgery, and Orthopedics at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

TABLE 1.—Review of Literature: Average of Results of Treatment of Intervertebral Disc Lesions†

	Total Cases	Cases with Follow-up Information	Results (Per Cent)			
			Excellent	Good†	Fair†	Poor†
22 authors*.....	5,218	4,704	57.1	33.8	7.4	3.8
All cases.....				90.9		
9 authors§.....		531	42.6	35.8	7.9	13.7
Compensation cases.....				78.4		

†See text for definition of terms.

*2, 4-7, 9, 12, 13, 15, 17, 18, 19, 22, 23, 24, 26-32.

§2, 6, 9, 13, 19, 22, 23, 24, 30.

†These results are based on the *clinical* evaluation by the surgeon, or by some independent examiner, as mentioned in some reports. Only two authors gave their reports on the basis of actual industrial accident ratings.

TABLE 2.—Compensation Cases: Per Cent of Patients Having No Permanent Disability, Partial and Total Disability, and Average Cost

	Total Cases	None	Disability			Average Degree of Disability (Per Cent)	Average Compensation Partial Disability
			Partial	Total			
Wilson ³⁰	100	50.0	47.0	3.0	38.7		\$1,823
Raaf and Berglund ¹⁹	88	9.0	87.5	3.5	....		1,015
Present series.....	75	42.0	54.0	4.0	28.6		1,835

TABLE 3.—Final Result: Comparison of Clinical with Compensation Evaluation

	Total Cases	Net Follow-ups	Results (Per Cent)			
			Excellent	Good	Fair	Poor
By clinical evaluation.....	98	75	63.3	30	1.7	5.0
Satisfactory.....				93.3		
By compensation result.....	98	75	42.1	17.1	36.6	3.2
Satisfactory.....				59.2		

and will be awarded from \$6,000 to \$12,000 or a life pension of about \$134 per month.

REVIEW OF LITERATURE

In a review of the literature, reports of 22 neurosurgeons who had operated on a total of 5,218 patients were studied. Fairly accurate follow-up information was available on 4,704 cases. Included were only 531 cases which were compensable (Table 1).

Wilson³⁰ of Akron, Ohio, in 1951 reported on 100 compensable cases (Table 2). Fifty were settled without any disability award. Of those disabled, the average rating was 38.7 per cent, and the average paid for each case was \$1,823. In 1948 Raaf and Berglund¹⁹ of Portland, Oregon, reported on 88 compensable cases. Only 9 per cent were settled without some disability award. The actual degree of disability in each case was not given, but evidently Oregon considers that more patients have some disability but not of so great a degree, as is indicated by the \$1,015 average settlement per case.

In the present series all patients were followed postoperatively by the author and by the referring physician. Each referring physician or orthopedist (in cases of spinal fusion) was sent a list of the patients he had referred and was asked to evaluate the

result on the basis of both subjective symptoms and the objective findings. These were averaged with the author's appraisal at the time of last examination, and a final estimate was determined as accurately as possible. In cases where there was a considerable difference of opinion, the opinion of the referring physician was used and no average was made.

By clinical evaluation, 63.3 per cent of patients in the present series obtained an excellent result, and 30 per cent a good result, making a combined satisfactory result in 93.3 per cent of the series (Table 3). The "compensation result" (Table 3) is based on actual reports from 13 insurance carriers given in degree (per cent) of permanent disability rating. The difference between the clinical result and the compensation result will be discussed later in this report.

DISTRIBUTION OF AWARDS GIVEN

Table 4 shows the awards actually given in 75 clinically grouped cases. Forty-six patients were considered to have had an excellent result, and 22 a good result. Of the 46, 26 were adjudged to have no disability. Ten were awarded a 20 per cent or less disability, costing the insurance company an average of only \$1,632 each, but ten were awarded an av-

TABLE 4.—Clinical Result Compared with Final Award

	Excellent	Good	Fair	Poor	Total
Clinical estimation.....	46	22	4	3	75
Compensation award given in above cases:					
No award.....	26	3	0	0	29
\$0 to \$2,000.....	(10) * \$1,622	(2) * \$ 1,950	(1) * \$ 2,000	0	13
\$2,000 to \$4,000.....	(10) * 2,836	(13) * 3,558	(2) * 2,750	0	25
\$4,000 to \$5,000.....	0	(2) * 4,850	0	0	2
\$6,000 and over.....		(1) * 6,030		(1) * \$ 6,000	
		(1) * 12,000	(1) * 12,000	(1) * 8,000	
				(1) * 12,000	6

* All parenthetical figures refer to number of patients.

TABLE 5.—Compensation Cases: Average Per Cent Disability and Award for Patients Having Hemilaminectomy and Disc Removal Only as Compared with Those Having Same Operation Plus Spinal Fusion

	Hemilaminectomy Cases	Average Settlement Cost	Hemilaminectomy and Fusion Cases	Average Settlement Cost
No award.....	20	0	10	0
Partial disability.....	17	\$ 2,710	25	\$ 3,441
Total disability.....	0	0	3	12,000
	37	(Average) \$ 1,245	38	(Average) \$ 3,212

erage of \$2,836. The greatest discrepancy between the clinical and compensation results was in the group of patients considered clinically to have had "good" results. Of these 22 patients, 17 were awarded over 20 per cent disability ranging from \$3,558 in 13 cases to \$6,030 in one case and \$12,000 in another. In a review of this group the author could find no explanation for the high awards other than that of persistent exaggeration on the part of the patient and unfounded claims on the part of his representative before the Industrial Accident Commission. In the group of patients with results classified "fair" and "poor," some indeed did have unsatisfactory outcome of treatment, which in retrospect can easily be explained. Most of the patients with "excellent" and "good" results are known to be working full time and at their usual type of work. Some have used their awards to start in some new line of work or to start a business of their own, such as building a home or operating a chicken ranch, and are working harder than before operation. One patient who received \$6,000 continued her duties as an office nurse. One patient is a bouncer in a night club. One of the patients who received \$12,000 was diving into a swimming pool when he had a convulsion, the first sign of a brain tumor.

Form letters of inquiry were recently sent to 17 patients who received the largest awards. Eleven replied. Eight had returned to work in less than one year, although only three said they were doing their usual kind of work. Two of the three who were not working were 58 and 63 years of age at the time of operation and the third was an obese, divorced, unhappy nurse with symptoms of hysterical nature both before and after operation. Of the six patients

who received the highest awards, five had had spinal fusion, one a fracture of the pelvis with shortening of one extremity, and four had had multiple operations.

LUMBAR AND LUMBOSACRAL FUSION

Various investigators, including Spurling²⁴ and some others, shun spinal fusion in any case. Others suggested doing fusion at a later date if necessary, and some reported carrying out fusion in from 20 to 50 per cent of patients. About half of the patients in the present series were treated by laminectomy only, and the other half by laminectomy combined with spinal fusion. In 20 of the 37 cases in which only disc removal and nerve root decompression by hemilaminectomy were done, no permanent disability was entailed in the final settlement, and the other 17 cases were closed with an average award of \$2,710. None received a large award; none were permanently disabled. The average degree of disability was 10.5 per cent and the average award was only \$1,245. As to the cases of 38 patients who had fusion, only ten were closed without an award, and in 25 partial disability cases the insurance company paid an average of \$3,441. The average overall disability was 27.6 per cent and the average award \$3,212 (see Table 5).

DISCUSSION

The pronounced discrepancy between the clinical results and the results based on the Industrial Accident Commission rating seems unjustified. It is believed that the difference must be due to excessive complaining and exaggeration on the part of the

claimant and his representative before the Commission referee, and that undue credence and importance are given to these subjective symptoms as compared with the objective findings as reported by the surgeon or clinician. The belief that surgical decompression of a single nerve root by removal of a herniated or degenerated nucleus pulposus necessarily entails a certain degree of disability is not justified by the clinical results as reported in the literature or as observed in nonindustrial cases, and in the industrial compensation cases in the series here reported.

In herniation or protrusion of an intervertebral disc the primary problem is pain due to compression of a nerve root at the point at which it leaves the spinal canal, to stretching of the recurrent nerves as they supply the posterior spinal ligament, or to compression of the entire cauda equina by a large ruptured nucleus pulposus. Except in the early stage of stretching of the recurrent nerve filaments, the differential diagnosis and relief of pain are primarily neurosurgical. Backache, leg pain and a defect on the myelogram do not necessarily make a diagnosis of disc injury, particularly in industrial cases. Trowbridge and French²⁵ recently reported that in 25 of 52 cases studied by cervical myelography there were also incidental defects in the lumbar area which were symptomless and had no clinical significance. Many defects in the lumbar area do not represent lesions which compress nerve roots or the cauda. Only by careful study can the symptoms be correlated with the neurological findings and the myelographic findings. The author has often seen by myelography a large hourglass defect at the fourth disc level in cases in which the neurological findings pointed to a compression of the first sacral root by a far-laterally placed ruptured nucleus from the fifth lumbar space, which caused no roentgenographically visible defect whatever.

The differential diagnosis is not as simple as might be assumed; extradural cyst, abscess, intradural and extradural neurofibromas and meningiomas, localized arachnoiditis and early metastatic carcinoma, particularly of prostatic origin without osseous changes, are all to be considered. Diabetic and syphilitic neuritis, Guillian Barré syndrome, alcoholic (deficiency) neuritis and pernicious anemia all may give pain in the lower extremities. If such a patient should recall some minor incident at work and also have a myelographic defect due to a chronic degenerated disc with hypertrophic lipping, and exploration to remove the disc were done on the strength of these circumstances, poor results and a high disability award would be likely. Nor does the presence of a myelographic defect necessarily indicate that operative treatment will make the patient a more useful producer. The degree of nerve root

compression as revealed by objective neurological findings, the degree of pain and the result of conservative treatment should be the determining factors in deciding to proceed with operative treatment.

As to the choice of operative procedure, three types of disc injuries cause distinct and different syndromes and clinical conditions and each requires a different surgical approach. In a given case, should the operation be simple unilateral partial hemilaminectomy with exposure of one root? Should another root be inspected at the same time? Is unilateral exposure sufficient to remove all the disc or is bilateral removal indicated? Do the findings at operation explain all the symptoms and signs of nerve root compression? After removal of the annulus and nucleus, do hypertrophic bony spurs persist which might continue to give symptoms? If the dura or root sleeve are torn by rupture of the disc or by manipulation, what is the best method of repair? These are all questions which must be determined by the neurological findings and by the best of neurosurgical experience and judgment. When the herniation is far lateral, sciatic pain is more severe, neurological findings are more definite, the myelographic defect is minimal or absent, but a more spectacular relief results from operative treatment. On the other hand, when the herniation is midline or there is a transverse bar protrusion, pain in the back is more severe than sciatic pain, neurological findings are minimal or absent, the myelographic defect is larger, and a more extensive exposure of the dura and nerve roots is required. The following statement is therefore justified: In disc lesions, the more lateral the herniation the more the diagnosis is a neurological problem; the more midline the herniation the more the operative exposure and removal is a neurosurgical problem. In either instance, only spinal stability is an orthopedic problem.

The indication for spinal fusion is an important one in industrial cases. The author is impressed that the best results are obtained when an orthopedic opinion has been given relative to advisability of spinal fusion. If fusion is not indicated, at least this opinion adds to the study of the case, is made a part of the record, and is important in the final disposition and rating. If fusion is indicated, it is done at the time of laminectomy. The benefit of opinions of two specialists are afforded the patient, effecting the best in clinical results and, in industrial cases, making for the least chance of disability. To authorize operative treatment for disc lesions and nerve root and caudal compression, without the benefit of neurological diagnostic confirmation and neurosurgical experience, is to entail an unjustified risk that the result will be less than satisfactory and the disability award high.

RECOMMENDATION

For the improvement of results and the lowering of disability awards, the following recommendations are made:

1. That detailed and careful histories be obtained regarding the relation of the patient's work to the disc lesion; report, if possible, a definite opinion as to whether the disc injury is totally caused by the work, is aggravated by it, or has no relation whatever.

2. That careful consideration be given to the patient's attitude, stability, tolerance for pain, his enthusiasm for his occupation, and promise for advancement, particularly in cases of questionable origin. When these features are not satisfactory or are questionable, then a settlement by compromise and release before operation should be recommended.

3. That by accurate diagnosis, selection of patients and proper surgical procedure, an attempt should be made to convince the various industrial accident commissions that the results of surgical treatment for injuries of the intervertebral disc in industrial cases should be comparable to those obtained in nonindustrial cases—should be such as to warrant a low disability rating in about 90 per cent of cases. Could this be accomplished, it is reasonable to assume that insurance carriers would be less reluctant to authorize surgical treatment.

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Conservative Treatment of Intervertebral Disc Injuries

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DR. WERDEN has clearly brought to our attention, not with clinical impressions but with statistical data, a very important phase of the analysis of end results in the treatment of the low lumbar intervertebral disc syndrome, namely, the pronounced disparity between the results obtained in cases that are subject to compensation payments and those that are not.

An orthopedic surgeon who has followed the progress of many patients for a number of years after hemilaminectomy must look upon the proportion of excellent and good results—90.9 per cent—noted in the review of the literature as surprisingly high.

With all due consideration to the authors of the reports that were cited, I am wondering if the data given might more accurately be considered expressive of intermediate rather than of end results. My reason for this doubt is the increasing number of patients we are seeing who apparently had excellent recovery following a hemilaminectomy but are now, four to five years later, returning to orthopedic surgeons with complaint of chronic backache. Often investigation in such cases discloses progressive discogenic disease at the operative level. In a high proportion of cases spinal fusion is required for relief.

If this observation is valid, Dr. Werden's statistics are subject to the same criterion. However, I feel his findings of 59 per cent more closely approximate the experience of most of us. If these statements seem unduly arbitrary, please understand that I believe a certain proportion of patients with satisfactory end results under conservative treatment undoubtedly have later episodes that render them candidates for surgical intervention. It must be borne in mind, however, that a large percentage remain well and never require operation, which is an irreversible step.

Therefore, it would seem that the problem does not end with the relief of "acute sciatica" and that

Presented before a Joint Meeting of the Sections on Industrial Medicine and Surgery, and Orthopedics at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

a long range view of the efficiency of the patient's back under his normal working conditions must be considered. The need of this symposium then becomes evident—to consider the various types and stages of treatment best suited individually for each patient, compensable or not, who has the low lumbar intervertebral disc syndrome.

I think it only fair—and I believe Dr. Werden will agree—to bring to your attention that there are differences between states, from a dollar standpoint, as to what clinical disabilities constitute measurable permanent disabilities. Hence, statistical comparisons of end results confined to the State of California will give us a clearer picture of this phase of the problem.

For some time, I have been interested in the subject of the lumbar intervertebral disc syndrome approached from the conservative viewpoint, and have submitted some 205 cases, private and compensable, to a similar statistical analysis of end results over a ten-year period. Striking similarities exist, in some phases, between Dr. Werden's findings and my own—and also, a few glaring discrepancies.

In order to eliminate so far as possible the factor of disagreement concerning the relative surgical skill of the orthopedic surgeon and the neurosurgeon in this particular operative procedure, I will state that all hemilaminectomies in the series here discussed were performed by outstanding neurosurgeons in the San Francisco Bay Area.

As in Dr. Werden's report, the patients had positive diagnosis of protruded intervertebral discs, they were operated upon by neurosurgeons and they all resided in California. (This applies to 27 per cent of the present series only, as the remainder were not treated surgically.) In 64 per cent of the private and 45 per cent of the industrial cases the patient was sufficiently recovered that operation was not indicated.

As to the conservative treatment used in the series, suffice it to say that a uniform protocol was followed throughout, consisting of the usual four main components—rest, support, rehabilitation exercises with or without physical therapy, and time—to which was added a fifth: Manipulation. The results are shown in Table 1. The average period of follow-up was almost two years; the shortest period was six months and the longest ten years.

TABLE 1.—Results of Manipulative Treatment

	Number of Cases	Results (Per Cent)				
		Satisfactory		Fair	Unsatisfactory	
		Excellent	Good		Immediately	Ultimately
Private Patients.....	72	32	32	11	20	5
Industrial Patients.....	133	25	20	18	29	8

TABLE 2.—Results of Laminectomy in Compensable and in Privately Treated Patients Who Were Not Adequately Benefitted by Conservative Treatment

	Number of Cases	Excellent	Good	Fair	Poor
Private patients	17	4	6	7	0
Industrial patients ..	39	7	11	13	8
Total	56	11	17	20	8

The manipulative treatment was arbitrarily restricted to two attempts in each case and operation was immediately recommended to those patients who did not have satisfactory results. Laminectomy was done in 56 cases (27 per cent of the series). Thirty-nine of the patients were subject to industrial compensation and 17 were privately treated. Spinal fusion was an additional procedure in seven compensable patients and in one private patient. The results are shown in Table 2. As in Dr. Werden's report, the results were much poorer in industrial than in private cases. Reducing the comparable data in the two series to percentage, we note that 18 per cent of the surgically treated patients in our series recovered without measurable permanent disability, as against 42 per cent in Dr. Werden's series.

On the other hand, in the 94 industrial cases in the present series in which conservative therapy, including manipulation, was successful, 77 per cent of patients recovered without measurable permanent disability. For the entire series of 133 cases, including those surgically and those conservatively treated, 59.4 per cent of patients recovered without measurable permanent disability. In the 60 cases finally adjudicated in the Werden series, 21 were closed without award—35 per cent.

In the cases that were ratable, the average dollar cost per case in permanent disability awards was \$6,073 in the Werden series and in ours \$4,728. The average cost in permanent disability awards for patients treated by manipulation (present series) was \$2,156.

Our observations are in complete agreement with Dr. Werden's, relative to the pronounced disparity in results between industrial and private patients and between the clinical results and the assumed permanent disability on industrial ratings. His comments as to causes are subscribed to by ourselves.

On the basis of comparison of results reported by Werden and those in the present series, it would seem indicated that for patients with herniated intervertebral disc, conservative treatment, including manipulation, be tried first. Failure of conservative treatment in no way interferes with operation later if necessary. The only loss is time and the cost of a few additional days of hospitalization.

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Treatment of Protruded Disc By Laminectomy Only

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AS PREFACE to my discussion of Dr. Werden's paper, it may be well to recognize that I do so from the standpoint of "Treatment of Protruded Disc by Laminectomy Only." It is probable the assignment was given to me because of my known belief that the simple disc operation is satisfactory in the majority of cases. Furthermore, I believe there is no indication for the combined operation—the removal of the disc by a neurosurgeon and then fusion by an orthopedist—and I believe that the surgeon should be able to diagnose and administer treatment, whether it be operative or nonoperative and whether he be a neurosurgeon or an orthopedic surgeon.

Although I think we are all a little afraid of statistics, we will have to congratulate Dr. Werden on the clinical results obtained in compensation cases. As to the wide difference between the clinical results and the results as judged from the standpoint of compensation awarded to the patients, I do not believe that these differences should surprise us too much if properly analyzed. A surgeon, in evaluating results in patients he has treated has a biased opinion. He wants the patient to get well. It is also deflating to his ego if the results are poor. Therefore, it is his natural tendency to over-evaluate and to classify his results as better than another surgeon would or better than the patient himself would. On the other hand, the cash settlement paid out by the insurer is probably often higher than is justified. This is because a patient may magnify, either consciously or subconsciously, the severity of symptoms.

Dr. Werden said that of 76 patients, 38 had the easy operation, and 38 had the hard operation. Of the 38 who had the easy operation, only 17 received money. Of the 38 who had the hard operation, 27 received money. The average amount received by those who had the easy operation was \$2,758. For 24 of the 27 who had the hard operation the average settlement was \$3,463. The three others received \$12,000 each. I would like to know on what basis the candidates were chosen for the combined operation and what were the complications that contributed to this degree of disability. Could some of these patients have had displacement of bone chips? How often did pseudarthrosis of the fusion occur? Were there any unrecognized cases of interbody infections? Were there any cases of arachnoiditis?

Presented before a Joint Meeting of the Sections on Industrial Medicine and Surgery, and Orthopedics at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

Dr. Werden said that "In disc lesions, the more lateral the herniation, the more the diagnosis is a neurological problem, and the more midline the herniation or protrusion, the more the operative exposure and removal is a neurosurgical problem, and "In either instance, only spinal stability is an orthopedic problem." On that point, I can only say that the more lateral the lesion, the more definite the neurological findings—so much so that even a second year medical student should be able to diagnose the case. The operation is very simple, and the results are usually quite good. The more midline the lesion, the more obscure the neurological findings and the more the physical findings are confined to the back. In many cases, so localized are the findings that the neurosurgeon believes that it must be an orthopedic problem having something to do with instability. Why should we call one phase of the condition a neurosurgical problem and another phase of the condition an orthopedic problem? I believe the time has come that our teaching should be that the surgeon, whether he be an orthopedic surgeon or a neurosurgeon, should be able to diagnose herniation of a disc and administer treatment whether operative or nonoperative. I believe the neurosurgeon should be criticized from the standpoint that too often he will undertake operative treatment of disc disease but cannot be bothered with nonoperative treatment. Also, if the patient has residual back pain after operation, the case becomes an orthopedic problem. The orthopedic surgeon, on the other hand, should be criticized if he has failed to recognize certain physical findings which indicate intervertebral disc disease or if he has not correlated these physical findings with pathological changes that are evident on exploration of the neural canal. There are still too many orthopedists who will make a diagnosis of unstable lumbosacral joint when the true condition is a degenerative change in the disc. To illustrate, I quote from the reports of a prominent orthopedic surgeon and a prominent neurosurgeon who examined the same patient, who was subject to industrial compensation.

Orthopedic opinion: "She has evidence of an unstable lumbosacral joint as manifested by a narrowing of the fifth interspace. At the present time, I believe that she is disabled from work requiring lifting. She could, however, carry out work which did not require lifting and bending and stooping. I feel that she should be fitted with a back brace and that this back brace should be used for a period of four or five months, concurrently with which the patient should carry on exercises to strengthen the musculature of the back. It is probable that on this program she will recover without disability."

Neurosurgeon's opinion: "It is my opinion that

this patient probably has a degeneration of her lumbosacral intervertebral disc which makes it vulnerable to recurrent protrusions through a thinned-out annular ligament. It is recommended that she be referred to an orthopedist and that he consider the use of some type of low back support. We do not believe that we have much to offer her inasmuch as there are no surgical measures indicated at this time."

It is unfair to the patient that he be subjected to this vacillation and indecision, because neither the neurosurgeon nor the orthopedist is capable of diagnosing and treating all phases of disc disease. The shunting of the patient back and forth leads to poor doctor-patient relationship and loss of confidence, and in the end probably has a great deal of effect on the amount of money awarded for partial permanent disability.

In conclusion, I want to challenge the author's statement, "In disc lesions only spinal stability is an orthopedic problem." I also want to challenge those orthopedists who will support or acquiesce to such an opinion. Either surgeon should treat all phases and stages of disc disease. How specialized a surgeon must have become, that he will only perform half of an operation!

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Laminectomy and Fusion For Disc Lesions

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AS MATERIAL for a discussion of treatment of intervertebral disc lesions by laminectomy and by fusion, records of 50 patients not previously operated upon, who were treated by one surgical team (the authors) in the years 1950-1955, were reviewed. No attempt was made to select the cases. Also reviewed were eight cases of patients who were dealt with after they had been treated elsewhere without satisfactory result.

Ten of the 50 cases in the first group were industrial and 40 were nonindustrial. (The nonindustrial cases included two in which the patients sought care after the termination of their industrial status.) No new methods were used. Laminectomy was done with the patient prone or lying on his side. Spine fusion was accomplished either by fitting "bone blocks" between the spines of the lumbar vertebrae and also

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Presented before a Joint Meeting of the Sections on Industrial Medicine and Surgery, and Orthopedics at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

placing multiple bone chips, or by the multiple bone chip method alone without attempt to destroy articulating facets. Laminectomy was done in 50 cases and spinal fusion in 14. In 19 cases there were enlarged or frankly extruded discs, but in the remainder of cases the pathological condition was less forthright—degenerated disc, nerve root adherent to the underlying disc material, enlarged edematous nerve, angulations of the sacrum in such a way as to cause stretching effect on the nerve posteriorly rather than anteriorly.

Results were classified as *good*, *fair* or *poor*. They were considered *good* if the patient had minimal ache and restriction of activity, was capable of doing his regular work and had only occasional mild recurrence; *fair* if the patient had some continuing complaint with acute recurrence necessitating conservative treatment from time to time but was able to continue work at regular assignments; *poor* if the patient could not successfully continue working and felt that the relief obtained was insufficient to warrant the discomforts of the operation. By these standards, results were as follows:

All Cases in the Series

	No. Cases	Per Cent
Good	25	50
Fair	16	32
Poor	9	18

Twelve Cases Involving Compensation or Litigation

	No. Cases	Per Cent
Good	5	42
Fair	3	25
Poor	4	33

Results of Spinal Fusion (14 Cases)

	Industrial	Nonindustrial	Total	Per Cent
Good	1	5	6	43
Fair	1	5	6	43
Poor	2	0	2	14

The proportion of acceptable results in the cases reviewed was somewhat higher than is generally reported in such series. One striking factor was the results in cases in which spinal fusion was done. Poor results in 14 per cent of cases is not high, considering the fact that the group included cases involving litigation or compensation. There were no failures in the cases in which these factors were not present. The results may be considered the more significant in light of the fact that fusion was done only in the most perplexing and difficult cases. In cases with a long history of pain, recurrent episodes and consultation with many physicians, the authors had poor response to conservative treatment either in the office or in the hospital. And in such cases when operation was carried out and the condition observed was not a large protruded or obviously extruded disc, but was rather degenerative protrusion, edematous adherent nerve, abnormal lumbosacral angle and/or unstable joint, fusion was resorted to.

All of the previously mentioned eight patients who had been treated elsewhere with unsatisfactory results had had laminectomy. Some of them had had more than one such operation. In four of those cases, one industrial and three nonindustrial, the authors carried out spinal fusion. Results were good in two nonindustrial cases and fair in the other two.

It was concluded from review of data on the two groups that there is no great difficulty in dealing with cases of gross protrusion or frank extrusion. Rather, the problems most often lie in treatment of "degenerative" conditions. From the data presented it would seem that greater application of the fusion operation in difficult cases, rather than laminectomy alone, could often bring about an acceptable result in cases in which without it the result would be poor.

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Treatment of Mental Illness

The Use and Misuse of Sedation and the Seclusion Room

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THE PURPOSE of this communication is to report an experiment in the operation of the receiving ward of the psychiatric service at the U. S. Naval Hospital, Oakland, California, over a ten-month period. During that time, it was found that barbiturate sedation was in most instances unnecessary, and often contraindicated, and that use of the seclusion room was not required. No form of mechanical restraint was employed. Cold packs were not used and there was no hydrotherapy available on the ward. It is felt that the experience on this ward, dealing with a total of approximately 1,000 patients, has direct bearing upon the care of emotionally ill and mentally ill patients in offices and in general and psychiatric hospitals.

Between July 1955 and mid-April 1956, the author was medical officer on the admission ward. In that time 939 patients were received on this ward, where they remained for an average of ten days before being assigned to a locked or unlocked ward in the psychiatric service. In addition to routine admission procedures and responsibilities, this ward was organized as a "therapeutic community." (This concept was adapted, with modifications, from the techniques and philosophies of Dr. Maxwell Jones, Belmont Hospital⁴; Dr. T. P. Rees, Warlingham Park⁷; and Dr. T. F. Main, Cassel Hospital,⁶ which the author observed while on temporary naval duty in England.)

The ward was a large temporary wooden structure containing 34 beds lined up on either side of a single room. The outside doors were locked and patients were not permitted off the ward unattended. There were two nurses on duty during the day, three or four corpsmen, and a social worker. The staff was not selected but was designated in normal rotation of Navy personnel.

The concept of the therapeutic community involves as free communication as possible between patients, between patients and staff and between

• Nine hundred and thirty-nine patients admitted to the locked receiving ward in the psychiatric service of the U. S. Naval Hospital, Oakland, over a ten-month period, many of them psychotic and in an acute initial episode, were treated with an intensive group therapy program, which more appropriately should be called a therapeutic community. During this time, the ward medical officer did not put any patients in a seclusion room. Patients who did not require a locked ward were quickly transferred to the open receiving ward which was established five months after this program began.

It was possible to greatly diminish the quantity of sleeping medicine prescribed and practically to eliminate the use of barbiturates given parenterally. Restraints were never used. To be dealt with in this atmosphere of candor and relative freedom seemed to evoke a responsive attitude in the patients and many of them benefited from it.

members of the staff. Treatment is continuous through 24 hours of each day on the ward, and whatever is said or done there is a matter of ward concern. Above all the therapeutic community is based on a sincere concern for the welfare of the patients. Without this, no amount of technique will work. In the present experiment the staff was told in the beginning that the use of the quiet room would be discontinued and that sleeping pills were to be given only in unusual circumstances. A formal sick call was to be held at 8:30 each morning, followed by a ward group meeting lasting about 45 minutes, at which all patients and staff—nurses and corpsmen—were expected to be present. Only the simple device of firmly expecting the patients to attend was used—no threats or demands—and only two of 939 patients refused to attend meetings. Both were severe paranoid schizophrenic patients overwhelmed by fear.

Immediately after the group meeting, the staff met separately for 30 minutes, during which time the meeting was discussed and ward or staff problems were brought up. The night crew would leave a letter about the previous evening's activity on the ward, and the ward medical officers would write them about the day's happenings. These written communications were usually read to the staff. While the staff was holding its separate meeting, the patients gathered in a spontaneous group on the ward. Once a week a

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Presented before the Section on Psychiatry and Neurology at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

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The opinions contained herein are those of the author and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

meeting was held with the corpsmen, and another with the nurses. In effect, this was on-the-job training for personnel.

At first, the staff doubted whether the ward could be operated in this fashion, without use of quiet rooms, restraint and parenteral sedation. Within two or three months the fact that it *would* work was obvious to all; but even more striking was that the best and most humane qualities in staff and patients were brought to the fore. It was, as one corpsman said, "believing in what you are doing—I suppose one could say faith."

The routines of the ward were simple, yet in a sense demanding. It was group-oriented—yet group therapy *per se* played only a small part. It was group living and intergroup living; it was continuous communication and the process of enculturation into the hospital.

When a patient entered during working hours, he was seen by the ward physician within an hour. Strict adherence to this simple rule had a decided effect on many patients. The friendly meeting, with a brief explanation of how the ward was conducted, was motivated by a sincere interest in the patients—a fact which most of them wanted to believe but of which a few were suspicious. It was capitalizing on the reservoir of faith that most people have in physicians. On the bulletin board in the ward was placed a sheet of paper on which any patient wishing to speak with the doctor individually could write his name. Each was seen in order, as time permitted, but always within 48 hours. The names were conspicuously checked off for all to see. This had the effect of decreasing demands for interview, and a glance at the list would serve as a barometer of ward pressure.

Since, so far as could be determined, there is no published experience of daily group work on an admission ward in a military hospital that could be used as a guide, our concepts were developed and adapted as time went on. Because of the rapid turnover of patients, it was found advantageous to add a Saturday group meeting. The group served as a constant safety-valve and was often a moving manifestation of the wish of people to help one another.

Being the only medical officer served me to advantage, since thus I knew each patient individually. The nurses, corpsmen, patients and I all belonged to the same military organization, and every effort was made to utilize the best features of military life for therapeutic goals. For example, certain ideas of obedience and conformity, respect and pride of belonging to a group unit, the spirit of working together for survival, the tolerance of racial and religious differences and self-respect were utilized

to foster a favorable treatment situation. Twice a week I met briefly in my office with the patients who were officers, chief petty officers and sergeants, and as a consequence they were able to retain their self-respect and status to some degree.

The special nature of the patient sample should be given careful consideration in evaluating the results. Data on the first 250 patients were analyzed as follows: Navy personnel comprised 75 per cent of the group, and Marine Corps personnel 24 per cent. The average age was 24.3 years, and the average length of service was 4.7 years. Of the 250 patients, 91.1 per cent were Caucasian, and two-thirds of the remaining 8.9 per cent were negroid. The group included nine officers and 29 sergeants or chiefs. Admission records showed that 21.6 per cent of the patients had come to the hospital from foreign stations, 32.4 per cent from ships in the Pacific and 46 per cent from shore stations in the United States. In terms of diagnosis, 44.4 per cent of the patients were psychotic (principally with mixed schizophrenic reactions or paranoid schizophrenia); 35.6 per cent were psychoneurotic; and 20 per cent had character or personality disorders. Almost all the psychotic patients had had no previous episodes of acute manifestation of disease and had had no previous treatment except in transit.

This communication will not discuss the group meetings in detail. It should be borne in mind, however, that group membership was constantly changing, with an average of three patients coming and going every day, and that the entry of severely sick new patients formed a spontaneous psychodrama.

In the year preceding July 1955, judging by a careful study of the psychiatric service log, there had been numerous incidents and disturbances. During the three months I had observed this ward as occasional officer of the day, I noted that the two quiet rooms were in almost constant use, and often patients could be heard beating on the doors. In these small bare locked rooms with only a mattress on the floor and the words QUIET ROOM painted over the door, patients who were most psychotic, delusional and hallucinatory were placed immediately on admission, *as if* they were too sick to be on the ward. Patients who had attempted suicide or were thought to be seriously suicidal were placed in these rooms *as if* it were not safe for them to be on the ward. It was a common procedure to give the disturbed patients barbiturates intravenously on admittance, which often made confinement in the seclusion rooms seemingly mandatory, since the patients became more confused, more disturbed by their sense of unreality and hallucinations and less responsive to directions. Moreover they were rendered weak and powerless and lost coordination.

It was our belief that the seclusion rooms did not offer as great safekeeping as the open ward, that use of them fostered regression and withdrawal, accentuated the fear of social contact, increased the sense of stigmatization as insane, confirmed the fear in a patient that he might lose all control and go to pieces, tended to lower self-control by placing him in a situation where he "could go crazy," or fostered in some neurotics the need for special privilege. For those patients who were not in the seclusion room, it meant other things: Some were intimidated, fearing they might be next; some of the sicker ones misinterpreted the yelling they heard from the seclusion rooms. For example, one psychotic patient, describing an experience in a previous hospital, demanded of me in the first interview, "What did they do with the body?" It turned out that a patient had been placed in a quiet room and then had been transferred to another hospital without making a reappearance on the ward. In other patients fears were aroused about the patients who were thought so dangerous by the doctors that they had to be in solitary confinement. Furthermore, if a doctor acquiesced in sending a patient to the quiet room on his own request, he often became a partner in the patient's acting out.

In July 1955, instructions were given to the staff that we would operate the ward as if we did not have quiet rooms. Within a month the mattresses were removed from the quiet rooms; one of the rooms was then furnished as an office and the other as a music room, with a piano. I was always aware of the possibility that an emergency could arise requiring isolation, but felt that even if that did occur, it would only be the exception to the rule.

Over a ten-month period with about 1,000 patients, a few of them desperately psychotic, suicidal or homicidal, I did not once find it necessary to place a patient in a seclusion room. It was not uncommon for as many as five to ten patients at a time to be admitted to the ward—some of them in various forms of mechanical restraint and many of them having spent days or weeks in seclusion rooms in other hospitals. Despite the fact that we told the patients we did not use quiet rooms on this ward, on five occasions the officer of the day, who was not a member of the admission ward staff but a psychiatrist from a different ward, placed a patient in a quiet room at night. The first time was six weeks after the ward began to be operated as a therapeutic community, and it came to my attention in a curious way. On a Wednesday morning, after a group had talked considerably about insomnia, a patient had become angry because of being refused a sleeping pill by the corpsman. This patient asked to see me after the meeting, and he told me he had been unable

to sleep since a nightmare he had had early the previous Monday morning. "Someone was yelling and getting hurt," he said. "I tried to wake up but couldn't. I felt paralyzed. Finally I awoke, afraid. I looked at my watch and it was 3 o'clock. I fell asleep in about an hour."

I mentioned this patient's dream to the nurse that afternoon and she told me that early on Monday morning the patient in the bed next to his had become upset, said he was afraid he would lose control and hurt someone, and asked to be placed in the quiet room. The officer of the day had come to see him at 3 a.m., prescribed a sedative and placed him in the quiet room, where he remained for an hour.

Upon learning this, I reviewed my notes on the group meetings, and found that Monday's group discussion, which had been devoted to the problem of being a mental patient, had been punctuated by statements by patients such as "God helps those who help themselves." In summarizing the group discussion of that day, I had noted that the patients spoke as if they had been talking about the need to deny certain things and that while they had talked a great deal, there seemed to be an idea that talking was dangerous.

As time went on this interpretation was confirmed, for it was observed that patients tended to have the feeling, when they first came into the hospital, that if they talked about what was *really* on their minds, they would be put in the quiet room.

I talked to the patient who had been angry because he was unable to sleep, and he denied any knowledge that the patient next to him had been anywhere except in his bed throughout the night. However, the insomnia disappeared.

In the second incident involving use of the quiet room, the patient had been admitted on the week-end—these quiet room incidents occurred on week-ends—and I had not seen him. He was a manic depressive patient in a manic phase and had been in a seclusion room in another hospital. He had been reassured by a corpsman that quiet rooms were not used on this ward. Later in the night, however, the officer of the day had been called to see the patient, had given him a large dose of a barbiturate and had put him in the quiet room. The Monday morning group discussion began with great excitement, with the patient in question standing up and yelling at me, "Speak, doctor, speak. I'm not afraid of being crazy, I'm not going to hurt you." When I asked him directly if he had been in a quiet room, he became even angrier with me, suspecting subterfuge, which was in keeping with experience on the ward—that is, reality. It was not necessary to seclude this patient again, and he made a reasonably good recovery, although on one occasion he provoked a brief fight.

In an individual interview with the patient after the group meeting, he cried almost the entire time. I asked him about the night before, and he replied: "How did I feel? How do you think I felt? I'm not supposed to be put in a quiet room by anyone just because he hates me. You know and I know that I'm sane. I won't hurt you. The officer of the day thought I was crazy. He didn't like me. I don't want to go back in the quiet room. You won't put me there, will you?" He then related to me a profound claustrophobia from early life.

The next instance of a patient being put in the quiet room on the admission ward was again not directly brought to my attention. The officer of the day transferred a patient who was drunk from open ward to admission ward, placing him in a quiet room with instructions that he was to be returned to the open ward at 7 o'clock the next morning.

The fourth patient placed in the quiet room was a hebephrenic schizophrenic patient who requested immediately on admission that he be given a private room. This was on a Sunday and on Monday morning he was removed from the quiet room.

It was five months before another patient was placed in the quiet room. This time a patient who, before admittance, had tried to kill himself by cutting his wrists, was heavily sedated with sodium amytal by the officer of the day. Then, because he was so groggy he could not stand, he was placed on a mattress in the quiet room. He might have been placed in a bed on the ward equipped with side rails.

It should be emphasized that over half of the patients admitted to our ward were not psychotic. It was for aggressive patients, or for the occasional patient who was greatly disoriented, delusional or tormented by hallucinations, that seclusion had been considered in the past. Now, on almost any day the ward would look like any medical or surgical ward, the patients conversing quietly, friendly and well behaved.

Unquestionably the seclusion room is sometimes used punitively; witness the colloquialism, "Throw 'em in the quiet room." Unquestionably also, patients are sometimes maltreated, and this maltreatment usually takes place in a quiet room or in an isolated room where it cannot be witnessed. This is one of the reasons putting an end to such practices is difficult—and also one of the reasons why care of the mentally ill must be brought into the open, both literally and figuratively. The physician himself must be responsible for seeing that maltreatment of the mentally ill does not occur even occasionally.

There is nothing new in the approach discussed here. With regard to sedation, there are innumerable references in the literature to its abuse. As to restraint and seclusion, over one hundred years ago it

was argued before the American Psychiatric Association that nonrestraint might work for the relatively mild, complacent English but not for the more violent, liberty-loving Americans.

Only about 8 per cent of the first 250 patients admitted in the period reviewed received the tranquilizing drugs chlorpromazine and reserpine. After four months, when it became evident that the social and therapeutic experience of the ward milieu was effective and that its efficacy did not depend upon medication, we felt free to evaluate the newer drugs on this ward. Consequently, by the end of ten months 27.6 per cent of the patients were receiving one or the other of these drugs. They were considered to be of particular help in the more aggressive, hyperactive psychotic patients and patients in delirium tremens.

Table 1 shows the use of barbiturates on the receiving ward during the period of the therapeutic community in comparison with their use during the four months immediately preceding its establishment. In the preceding four months, during which 440 patients were admitted, 263 doses of barbiturates and 51 injections of sodium amytal had been given. In contrast, during the first full four months of the therapeutic community experiment, a period in which 367 patients were admitted, 53 doses of barbiturates and five injections of sodium amytal were given; and in the last four-month period of the experiment, with 443 patients admitted, there were only 19 doses of barbiturates given and five injections of sodium amytal. During the entire ten-month period under review, the ward medical officer ordered only 23 doses of barbiturates and three injections of sodium amytal, for patients in acute excitement; all the remaining were given on order of the officer of the day.

The decline in the use of the quiet room and sedation on the receiving ward, as well as an increase in use of the tranquilizing drugs, coincided with a decrease in use of electroshock and a discontinuance of the use of insulin coma therapy in the hospital. Only one patient received electroshock while in the admission ward. He was very violent on admission, kicking in a door and striking at me, but he settled down and remained quiet on the ward, although he would not come to the group meetings. On one occasion, he took a corpsman's key and ran from the ward. At no time did he strike another patient or do any violence once he was in pajamas and actually admitted to the ward. I was so inseparably enmeshed in his delusional system that he was almost totally out of reach of psychotherapy. He improved dramatically after a number of electroshock treatments. In general, however, it was my impression

TABLE 1.—Use of Barbiturates on the Receiving Ward Between January 1955 and April 1956*

	No. of Admissions	Nembutal 100 mg.	Seconal 100 mg.	Sodium Amytal 0.2 gm.	Sodium Amytal Intramuscularly 0.5 gm.
<i>1955 (prior to therapeutic community):</i>					
Mar.	128	23	18	21	19
Apr.	116	40	6	10	19
May	99	18	27	12	10
June	97	52	31	5	3
	440	133	82	48	51
<i>(Transition month):</i>					
July	79	43	10	5	1
<i>(Therapeutic community):</i>					
Aug.	91	7	9	0	1
Sept.	90	5	16	6	0
Oct.	86	5	1	0	0
Nov.	100	0	2	2	4
	367	17	28	8	5
Dec.	102	0	1	0	0
<i>1956:</i>					
Jan.	127	0	5	5	2
Feb.	86	0	4	0	1
Mar.	128	0	4	0	2
	443	0	14	5	5

*These data are taken from the nursing log. In addition to the above, one injection of sodium phenobarbital was given in March, 1955, and one in March, 1956. Phenobarbital 30 mg. was given largely in cases of epilepsy after July, 1955, a total of 145 tablets in all. In the preceding four months, 58 tablets were given. A total of 1 cc. of nembutal was given after July, 1955, and no sodium amytal. The total of 939 includes 50 patients admitted in early April 1956.

that the pendulum swung too far—that electroshock was not given to depressed patients who might well have profited by it. This is understandable, perhaps, in light of the history of abuse of electroshock in the last decade. But abuse of the prescription of sleeping medication can, I believe, run no danger if the pendulum swings far the other way. If one is going to decrease the amount of barbiturates, it is necessary to discuss the matter with the patient, and also to talk with him about the reason for his insomnia. Patients who have been taking barbiturates every night for a month have had medication discontinued, to their conscious relief, and have found that after a few restless nights they have usually worried their problems through to relatively constructive solutions. This is not necessarily done alone, but is facilitated by the therapeutic community.

It was our definite impression that giving barbiturates by mouth or by injection in large doses made schizophrenic patients more confused, more at the mercy of hallucinations and delusions and at a great disadvantage in dealing with reality. It fostered disorientation and clouding of consciousness and perception. It also seemed to make schizophrenic patients less amenable to psychotherapy. The routine use of barbiturates in the transfer of

patients from hospital to hospital was observed as a definite complication in the transportation and reception of the patient. The routine use of barbiturates for neurotic patients and patients with character disorders who were being transferred was not only resented by them but was found to be unnecessary and even deleterious.

Many physicians apparently feel that in dealing with an acutely disturbed patient the first thing to do is to put him to sleep. There is also an impulse toward ordering sleeping medicine for insomnia patients. Many times, it seems from reading the records, these drugs have been given not because the patient could not tolerate his anxiety and insomnia (as evidenced by his toleration of it on our ward) but because the physician could not tolerate the anxiety aroused within himself. Another reason for the "routine" prescription of sleeping medicine is to insure the physician's own sleep. The care of the patient begins always with caring for the patient.

A patient came to my office one evening for a sleeping pill, saying he had been given one every night in another hospital since he had been sick. I explained that this was not done on this ward except in unusual circumstances and that patients tended to become dependent on these drugs. He said he thought that was a good idea and thanked me. He slept that night. The next day, he asked to see me and said, "I left your office reasoning a lot of things out, and was much more relaxed. I reasoned them out for myself for the first time. I realized I hadn't lost my faith or my family. I called my father. He reassured me that everything would be all right. I suddenly felt relaxed and dropped off to sleep. I dreamed about my wife."

The problem of the sleeping pill is not unlike the problem of the quiet room. We are asking people to call upon the reservoir of strength existing within them. Just as the sleeping pill diminishes stress to a point where a patient is often at the mercy of his fantasy and distorted thinking, so the seclusion room, with its absence of social stresses, produces other stresses of its own. There is evidence in the literature that isolation *per se*, even in healthy persons, acts as a powerful stress; and when the level of physical stimuli is diminished to the lowest possible point, a normal person may be driven to visual hallucination.⁵ It is my clinical impression that isolation in the seclusion room and the use of restraints and barbiturates in large doses act as stress factors stimulating further psychotic symptoms and aggressive behavior.

There is a great deal written in the literature about meeting the patient's needs. One of the needs is to set limits. The therapeutic community has permitted us effectively to set limits on social behavior, making the seclusion room practically unnecessary,

and has permitted us to set limits on the prescription of sedatives—in effect, to say no. A very hostile Marine officer, aware of our policy in regard to sleeping medication, demanded in the middle of the night that the corpsman call the officer of the day for a sedative. The patient stood by as the corpsman called the doctor, who instructed the corpsman to give the patient what he requested. The patient, without waiting to hear the answer, turned away in sullen resignation (and probably some satisfaction of a hostile nature) saying, “Yeah, I know—no pills,” and walked to his bed and fell asleep.

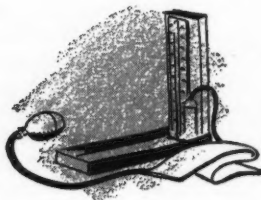
Naval Medical Research Institute, Bethesda 14, Maryland.

ACKNOWLEDGMENT

The author wishes to express his appreciation to Rear Admiral Bartholomew Hogan, Surgeon General, U. S. Navy; Capt. George Raines, Chief of Neuropsychiatry Branch, U. S. Navy, and particularly to the staff of U. S. Naval Hospital, Oakland, for their help.

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The Whiplash Injury

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RECENT MEDICAL LITERATURE contains many articles describing the so-called "whiplash injury" received in automobile collisions. There has been very little written regarding the physical forces of static inertia and the inertia of motion by which these injuries are brought about. In the literature it has been widely reported that the injured person, describing what happened to him, often says that the car in which he was riding was struck from the rear, that he was projected forward into the windshield or the steering wheel and then felt a jerk backward. In a study of the subject the author's observations were that this sequence of events did not occur in the circumstances given.

In a study of kinematics of impact,* graphs were made showing the motions of cars involved in a front and rear collision. The rearward car in these experiments was driven by a human and in the car that was struck there was a dummy with the head fixed to the trunk by means of a coil spring having equal resistance in all planes of motion. Motion pictures were taken of collisions. The time between consecutive pictures was 1/64th of a second. At the site of collision, markers were spaced at 2-foot intervals parallel to the motion of the cars. The markers were reversed and the collisions repeated to obtain accuracy. By measuring the distance from a marker to a marked part of the car, the distance of movement of the cars was determined. Correction was made for the parallax of the position of the camera and the distance between the car and the marker. The motion of the car was plotted against time on a graph. The velocity of the car was determined by dividing the distance ordinate of the tangent at any given point of the curve by the time abscissa. The velocity, likewise, was then plotted against time. The acceleration of the car was then determined by dividing the velocity of the ordinate of the tangent to the curve by its time abscissa.

This is technically known as finding the "slope of the curve." If the slope is to the right, the value is positive and if to the left the value is negative.

For a given mass, the force acting upon it which produces motion, is proportional to the acceleration. Therefore if the acceleration and the mass involved

is known, it is a simple matter to calculate the force producing the acceleration by the formula† as follows:

$$F = \frac{W}{G} \times A.$$

The purpose of the study was to answer this question:

When a car is stopped temporarily at an intersection and is bumped from the rear by another car headed in the same direction, what is the effect physically on the drivers of the two cars?

Without definite information as to the weight of each car and driver, the slope and the condition of the road, the velocity of the moving car at the time of the impact, the resilience of the bumpers, the posture of the drivers, together with other factors, this question can be answered only in a general way. Let it be assumed that the collision occurs on a level, paved highway, that the cars are of equal weight and that the car that is struck from the rear is stationary at an intersection, the driver being relaxed and not anticipating a collision. The car approaching from the rear fails to stop in time and collides with the stationary car. The driver of the moving car usually has applied his brakes before the impact, causing the front of his car to nose downward, the top of his bumper therefore hitting the lower portion of the recipient's bumper or even passing beneath it. Or, because of the variability of the height of bumpers, the bumpers might be on the same plane at the moment of impact. The bumpers of both cars will absorb some of the force of the impact, the amount depending upon their resilience. The maximum force of impact between the two cars does not occur until the bumpers or other parts of the cars are deformed to the greatest extent from the amount of force applied. Therefore, the greater the resilience, the longer the time of deceleration of the moving car and of acceleration of the stationary car, and the less the effect of the impact on the persons in the cars. During the time of impact and the partial absorption of the blow by yielding bumpers, the rearward car is decelerating at a rapid rate and the forward car is accelerating at a rapid rate. The driver of the forward car does not immediately experience this rapid acceleration, as there is a very brief interval before the impulse

Submitted August 5, 1955.

*The City of Vallejo Police Department cooperated in the present study. Vehicles used were supplied gratis by the Marine Chevrolet Company of Vallejo. The physical calculations were made by L. Bryan, A.B.D., and the photographic work was done by Carl Manner, A.B.D., both of the faculty of Vallejo Junior College.

†F = Force in pounds; W = Weight in pounds; G = Acceleration due to gravity (32 ft./sec.²); A = Acceleration in ft./sec.²

passes through the body of the car and is transferred to him. As the car moves forward, his body tends to remain stationary in space, since he is not in motion at the time of the impact. The effect of this is that he is thrust backward against the seat of the car, and his body, not being supported by the seat from the shoulders upward, acts and conforms as an inverted pendulum pivoting about the sacral region. The maximum degree of momentum is received by the head pivoting backward on the neck, causing it to continue its motion even after the initial or original impulse has terminated (Chart A). During this backward swing of the neck with respect to the rest of the body, there occurs a tendency toward an elongation of the neck and subsequently a protective reflex contraction of the musculature of the neck, depending upon the involuntary reflex time of the individual. This contraction of the musculature of the neck is considered a protective response comparable to that occurring when a hand is inadvertently placed on a hot stove. At approximately midway in the time duration of the impact the two cars arrive at the same velocity. Then, unless they are locked together, the cars separate owing to a rebound impulse and the effect of braking on the rearward car. At the instant of separation the forward car begins to decelerate. This deceleration rate is small compared to the acceleration that occurred upon impact. At the time deceleration begins, the body of the passenger in the forward car is still in the thrust backward position in the seat. Again there is a slight delay between the motion of the car and that of the driver. His head may not even have reached its maximum backward motion at the time the car begins to decelerate. However, in a small fraction of a second, the passenger experiences the same deceleration as the car. This causes his body to swing forward, which is further aided by his normal reflex action; and the forces by this time are much less than those obtaining at the instant of impact. The speed of the forward motion of his body is considered due to the resilience of the seat and to the acquired momentum of the body (depending upon, of course, the force of the impact and the velocity acquired during the impact and the rate of deceleration of the rest of the car); and, as previously noted, it may also be greatly increased by the recipient's reflex protective action.

The effect of collision on the driver of the rearward car is calculated as follows:

Realizing the impending impact, he suddenly applies his brakes, his muscles are tensed and he is afforded protective bracing by the steering wheel and his relation to the seat. (Such protective factors would be less if the driver were not aware of impending collision.) During the impact when the

car is rapidly decelerating, his body tends to continue its forward motion, the upper portion tending to move forward faster than the lower part because of friction and bracing through the lower extremities. The amount of forward motion of the driver is determined by the amount of bracing and muscular response. If he is projected forward enough for his chest to strike the steering wheel, the pivot then would be entirely on the neck. A rider in the front seat of the car, if he is not anticipating the collision, would be projected forward against the nearest impediment—usually the dashboard—in the interior of the car, which he would strike with a velocity about equal to that of the car in which he was riding at the instant of impact, minus the mutual velocity at which the two cars had arrived before separating. Roughly, the velocity of the rider hitting against the dashboard would be about half that of the car in which he was riding when collision occurred.

The weights of the involved cars are also important factors and bear relationship to the degree of force impact. In general, if the car in motion is heavier than the stationary car, the stationary car will be forced to a greater velocity in relation to the velocity of the moving car, and consequently will have a greater acceleration than if it were heavier than the moving car. If the stationary car is the heavier, the converse is true.

The accompanying chart was made from data obtained from photographic timing correlated by mathematical equations. As revealed by the position of the head of the dummy in the car that was stationary and was struck from the rear, the first motion of the head on impact is backward and subsequently forward.

In these studies no attempt was made to correlate the degree of injury in relation to the velocity of impact. Experience in treating such injuries indicates they frequently occur in collisions in which the impact of collision was relatively light.

In an analysis of 40 consecutive cases of whiplash injuries, all of which were subjects of civil litigation, it is significant that in no instance in the series was it ascertained that an occupant of the car approaching from the rear received a cervical or whiplash injury. This can be explained by the precollision protective reflexes set in motion in the driver passengers. For the sake of clarity, the symptoms and objective findings in the 40 cases are discussed briefly under the following headings:

A. Number of patients who had immediate traction to neck, 2 (5 per cent).

Apparently immediate cervical traction, applied before muscular spasm occurs or soon after the onset of muscular spasm, appreciably decreased the

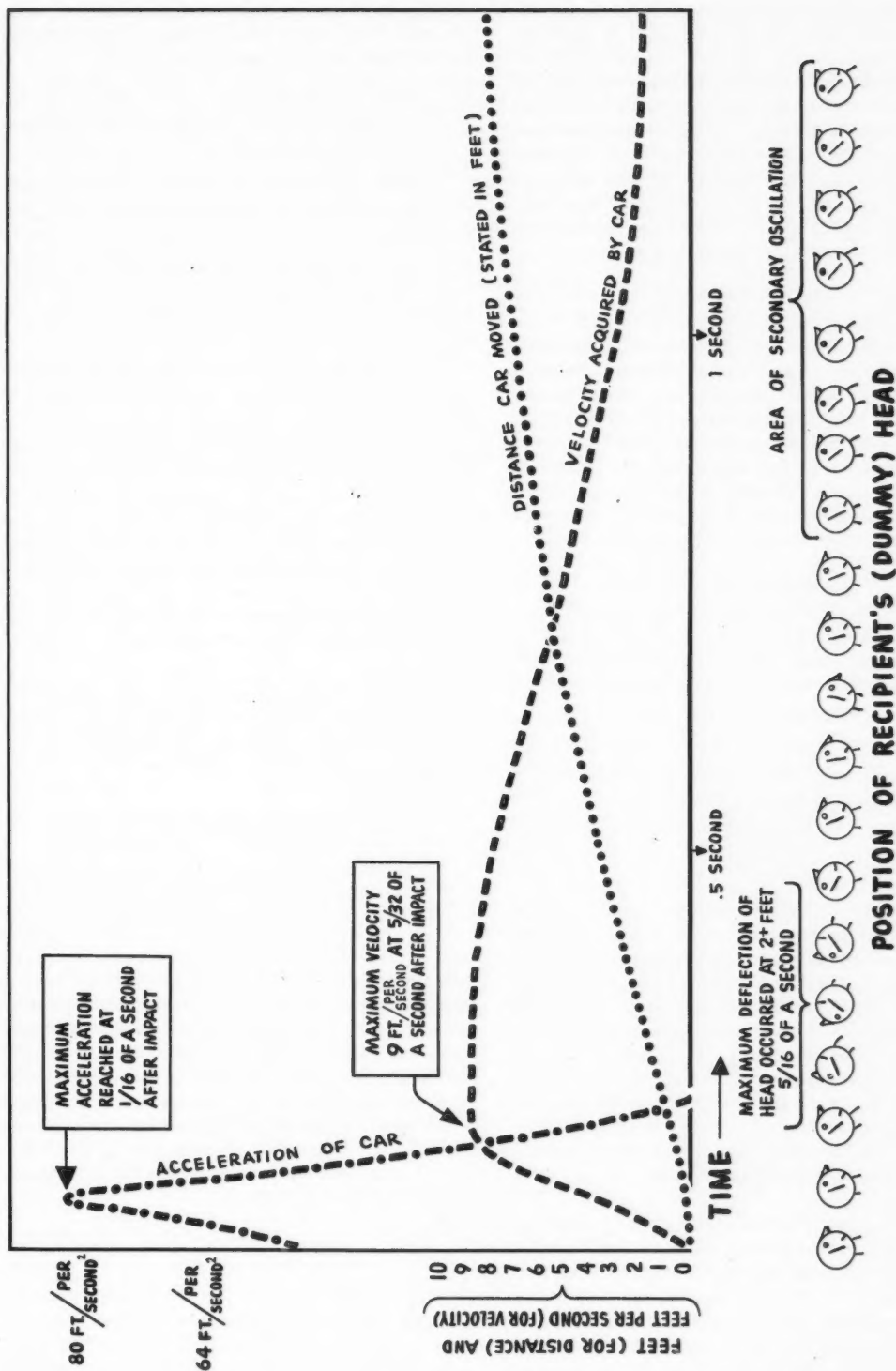


Chart A.—Data on the effect of impact on a stationary automobile struck from the rear by another automobile. The speed of the rearward car was 10 miles per hour (14.6 feet per second) at the moment of impact. In the stationary car the coil spring which supported the dummy's head had equal resistance to motion in the vertical planes.

recovery period and consistent relief from discomfort correlated the relaxation afforded by traction. In these cases of potential pain from whiplash injuries, the often associated symptomatology of headache, anxiety, personality changes, et cetera, did not develop, possibly because traction lessened the muscular contraction of the neck, increased the intervertebral spaces and to some extent also increased the aperture of the nerve root foramen, thus giving symptomatic relief and forestalling the development of the cycle of secondary symptoms.

B. Number of cases in which application of traction or cervical collar was delayed, 20 (50 per cent).

There was apparently a relationship between emotional build-up and the lapse of time before cervical traction or a cervical collar was applied for relief of pain. It is believed that in such cases a good deal of emotional and anxiety apprehension could be avoided if the patient were thoroughly informed as to the problems of treatment and the pain, headaches and other symptoms to be anticipated, and as to the time needed for maximum recovery.

C. Number of whiplash cases in which there was associated cervical fracture, 1 (2.5 per cent).

In this instance the inferior articulating process of the fifth cervical vertebra was fractured. There was an associated fracture of the spinous processes of the sixth vertebra.

D. Number of patients who had immediate pain or radiating pain into either upper extremity or involvement of brachial plexus, 1 (2.5 per cent). Number who had delayed radiating pain into either upper extremity or involvement of brachial plexus, 17 (42.5 per cent).

That immediate pain or radiating pain involving the upper extremities occurred in only one case in forty is indicative that the structure of the cervical neck is capable of withstanding sudden flexion and extension motions without primary nerve injury. In those cases in which there was delayed radiating pain into either upper extremity, the symptom was assumed to be produced by nerve root edema with impingement at the foramen orifice causing pressure on the nerve. This usually occurs in from 6 to 24 hours after the accident. Nerve root edema is theoretically decreased by immobilization, rest and traction.

In none of the 17 cases was there permanent paralysis involving the medial, radial or ulnar nerves. Six of the 17 patients had motor weakness with sensory changes in the extremities, two had motor weakness without sensory changes and four had sensory changes without motor weakness. Five of the 17 patients had decreased hand compression

strength (by Geckler dynamometer comparison with the uninvolved hand, with allowance made for difference between major and minor hand).

E. Number of proved disc injuries diagnosed by the author or by other physicians who examined some of the patients, none.

F. Number of patients who had associated arthritic changes of the cervical vertebra, 13 (32.5 per cent).

In these 13 cases an attempt was made to determine whether the whiplash injury exacerbated pre-existing arthritic changes, using the following criteria:

1. Comparative x-ray films to determine changes beyond the usual ones to be anticipated over the time interval.

2. Repeated evaluation of the integrity of the patient in relation to the subjective complaints referable to arthritis.

3. Estimation of the force of the impact that caused the injury, the position of the patient at impact if determinable, the position of the patient immediately after impact and the position finally assumed—whether thrown free of the car or against the structure of the interior of the car.

The findings were inconclusive. In many cases there was no radiologically perceptible change, no impairment of the range of normal motion of the cervical vertebra and no increase or persistency of radicular pain.

G. Number of patients with associated concussion or commotio cerebri, 19 (47.5 per cent).

(a) Number with moderate concussion, dazed one hour or less, 17 (42.5 per cent).

(b) Number unconscious for one hour or more, 2 (5 per cent).

In the 17 cases of moderate concussion, vertigo and headache were the most prominent and persistent symptoms. Two of the 17 patients had systematized vertigo, which was considered to indicate that the system for control of balance and position was involved. The other 15 had nonsystematized vertigo which was considered a component of the postconcussional syndrome after examination to determine that it could not be validly attributed to organic disease elsewhere in the body.

H. Number of patients who had electroencephalographic changes indicative of trauma, 4 (10 per cent).

In this connection, question arises as to how long patients with positive electroencephalographic change must be observed, and by what methods examined, to be sure that sequelae will not develop. The answer

to this question must be given by those who are specialists in this field.

- I. *Number of cases in which caloric and hearing tests were used as a positive adjunct to diagnosis, 2 (5 per cent).*

Caloric tests were found extremely valuable in diagnosis. They should be performed in all cases of whiplash injury in which the patient persistently complains of vertigo. In both cases in which these tests were done in the present series there was associated concussion.

- J. *Number of patients with objective palpable muscular spasm in neck independent of subjective complaints, 18 (45 per cent).*

A routine procedure was followed in palpating muscular spasm referable to the neck. Light and firm palpation was repeated while the attention of the patient was distracted. There was a direct positive relation of the degree of spasm to the ability of the person examined to particularize this subjective complaint. Muscular spasm must be ascertained with the patient both upright and recumbent.

- K. *Number of patients subconsciously or consciously exaggerating the subjective symptoms referable to neck, 5 (12.5 per cent).*

It is the author's opinion that five patients definitely exaggerated the subjective symptoms. The minor exaggerations referable to subjective symptoms in many cases were disregarded and are not included here.

- L. *Number of patients complaining of headache, 22 (55 per cent).*

Before attributing headache to a whiplash injury, full consideration must be given to other possible causes—neuralgic, allergic and tensive, for example. Muscular spasm, if present, is almost invariably accompanied by headache. Myofascitis of the cervical structures, periarthritis and arthritis are all capable of producing various degrees of headache. Determin-

ing whether or not it is related to the whiplash injury may be difficult.

- M. *Number of patients who had emotional disturbance, 9 (22.5 per cent).*

The emotional disturbances which accompany whiplash injuries have been described in detail by numerous neurologists and neuropsychiatrists. From their experience and writings it is well authenticated that the emotional disturbance is a component of the postconcussional syndrome.

- N. *Number who had cervical dislocations, 1 (2.5 per cent).*

It is quite conceivable and theoretically sound that patients receiving moderate or severe whiplash injury could have partial dislocation of the cervical vertebra, and then immediate and spontaneous reduction. So far as could be determined in the present series there was no way by which to determine the degree of force in a specific case and the relationship of the force to the production of dislocation. In considering the possibility of spontaneous reduction of cervical dislocation occurring before radiological studies can be made, it would be expected in such cases that the symptoms might be persistent and objective findings more prolonged than in cases of minimal or moderate injury at the site of ligamentous and fascial attachment.

It is quite apparent from the physical factors involved, both as to the force of impact and the structure of the individual, that there is ground for a wide diversity of opinion among medical examiners in evaluating the injury from a legal standpoint. The admitted medical unknowns create a fertile field for litigation as applicable to whiplash injuries. It follows that the medical examiner in such cases should convey in reports and, when necessary, in testimony, direct and unbiased opinions based upon proved substantiated medical knowns from a structural and physiological standpoint. Only by so doing can a reasonable degree of certainty be obtained.

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Traumatic Hemopneumothorax in the Minor Pulmonary Fissure

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THE OCCURRENCE of isolated collections of fluid or blood in the interlobar pulmonary fissures is well known.²⁻⁶ The principles of radiologic differentiation of these interlobar collections from the intrapulmonary lesions they so often simulate have been well worked out and are now generally recognized.^{2,7} When the fluid is limited to the minor fissure, differentiation from parenchymal lesions of adjacent segments of the middle and upper lobe may be troublesome, but with the aid of fluoroscopically-selected oblique views, and laminagraphy, the differentiation can usually be made.

However, the occurrence of a related and equally deceptive lesion, hemopneumothorax in the minor fissure, the result of trauma, has not been generally recognized and so far as could be determined, has not been described previously. It is the purpose of this paper to report three cases of such lesions and to enumerate the features by which the condition may be differentiated from lung abscess and from communicating lung cyst.

CLINICAL FEATURES

The three patients were young men, ages 21 to 30, each of whom incurred, in an automobile accident, a chest injury severe enough to fracture one or more of the upper four ribs. In two, the rib fractures were on the right, but in the third, the rib fractures were on the left side only. Two of the patients had immediate hemoptysis, and two showed subcutaneous emphysema. One had associated right general pneumothorax and pleural effusion, while the patient with the rib fractures on the left side had general pneumothorax on that side.

In each patient, an x-ray film of the chest, taken from one and one-half hours to three days after injury, showed an oval lesion, with air-fluid level, deep in the midportion of the right lung field.

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Presented before the Section on Radiology at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

• Traumatic rupture of the visceral pleura lining the minor pulmonary fissure may produce encapsulated hemopneumothorax limited to the space between the right upper and middle lobes.

This lesion, which may persist for several weeks, may be differentiated from cystic pulmonary lesions and from lung abscess by its radiologically demonstrated constant and intimate symmetrical relation to the plane of the minor fissure.

REPORTS OF CASES

CASE 1. A 30-year-old dentist with no previous history of chest disease was struck on the chest in an automobile accident. He promptly coughed blood, and felt severe inspiratory chest pain. Survey x-ray films one and one-half hours after injury showed an oval cavity, interpreted as a "lung cyst" with fluid and gas, in the right midlung field.

More complete x-ray studies four days later (Herrick Memorial Hospital) showed minute fractures of the right third and fourth ribs, and separation of the right first costochondral junction. A 2 × 6 cm. oval lesion (Figure 1) containing air and fluid was seen in the right midlung field. The posterior borders of the lesion coincided exactly with the position of the posterior portion of the minor pulmonary fissure as shown on the routine lateral films of the chest taken previously. Fluoroscopy showed the fluid freely movable within the cavity. Lateral laminagrams showed the lesion merging anteriorly into the line of the minor pulmonary fissure; posteriorly, by a small dense triangle, into the junction of minor and major fissures (Figure 2).

Two weeks after injury the fluid had almost disappeared and the cavity had shrunk to a 2 cm. gas pocket. After one month, there was only a residual slight thickening of the minor fissure. At last report patient was well and working.

CASE 2. A 21-year-old mechanic, with no history of previous chest disease, fell out of a truck as it turned over, breaking his left scapula and clavicle and the top three ribs on the left. The patient, when questioned later, did not recall spitting blood, but he had been briefly unconscious. X-ray films taken shortly after the injury showed left pneumothorax and left subcutaneous emphysema, but no right pneumothorax or fluid was noted (films not available for review). Three days after injury, a cavity



Figure 1 (Case 1).—Upright films of the chest, four days after injury, showing the air-and-fluid collection in the minor interlobar fissure. *Left*: Postero-anterior projection. *Center*: Right lateral projection. *Right*: Left anterior oblique projection (Bucky) of right midlung field.

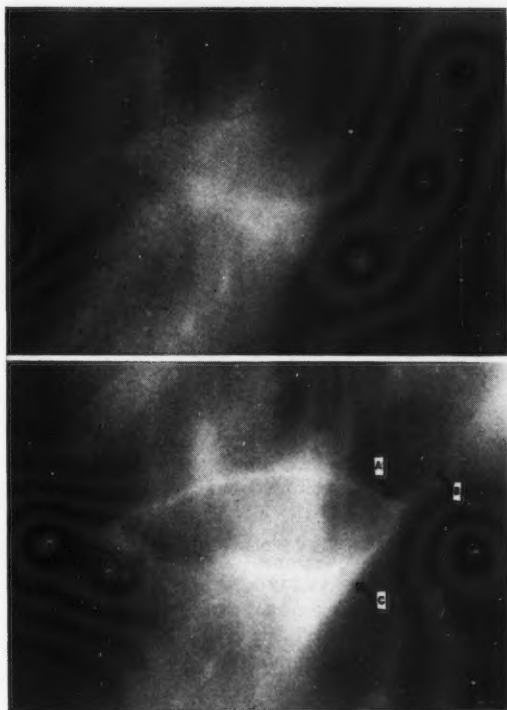


Figure 2 (Case 1).—Lateral laminagrams, right decubitus of right midlung field five days after injury. Note the triangular density posteriorly as the lesion reaches the major interlobar fissure. *Above*: Section taken below fluid level. *Below*: Section taken just above fluid level, in air-containing portion of lesion. Arrow *A* points to triangular density. Arrows *B* and *C* point to major interlobar fissure.

was seen in the right lung field and the patient was admitted to Peralta Hospital with a provisional diagnosis of "lung abscess."

Figure 3, taken ten days after injury, shows the fluid collection with the air bubble above it; it measured 7 cm. in the lateral view but only 4.5 cm.



Figure 3 (Case 2).—Upright films of the right midlung field, 16 days after injury, showing air-fluid collection in the minor interlobar fissure. *Above*: Postero-anterior projection. *Below*: Lateral projection.

in the postero-anterior projection. In the lateral view, the lesion blended into the posterior end of the minor fissure by a small dense triangle. Repeated attempts at bronchoscopic aspiration failed to empty the cavity. On the 27th day, needle aspiration through the chest wall was carried out under fluoroscopic guidance and 5 cc. of bloody fluid and gas was withdrawn. Films taken immediately afterward showed the lesion much smaller. The patient was

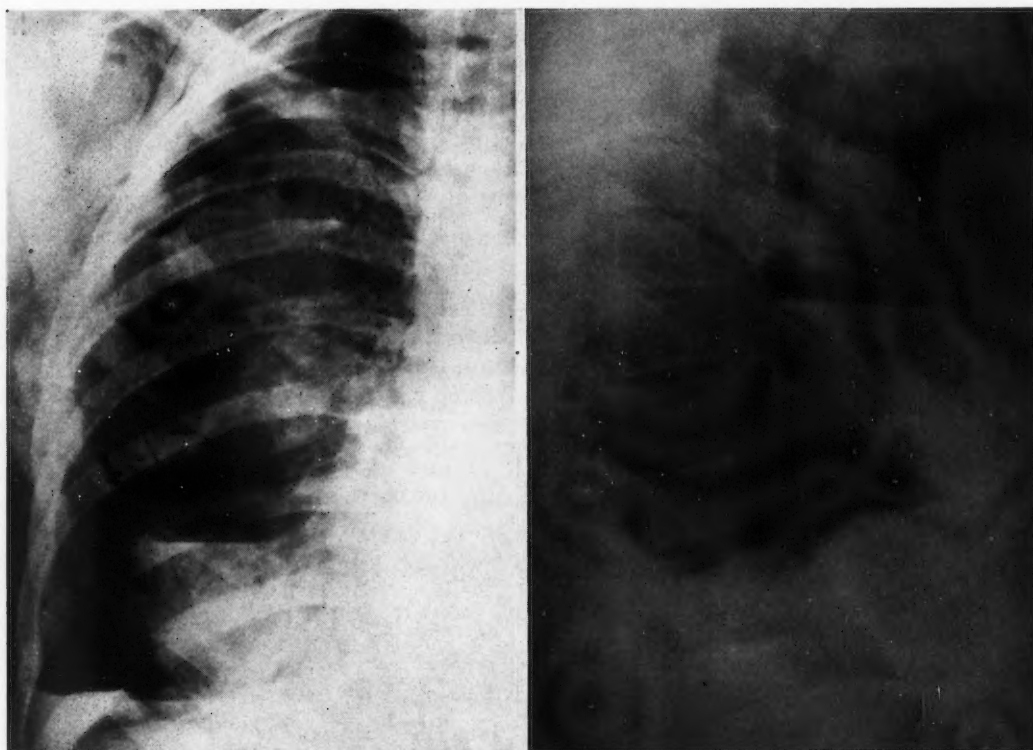


Figure 4 (Case 3).—*Left*: Upright film of the right hemithorax one day after injury, showing air-and-fluid collection in the minor interlobar fissure, air and fluid in the right pleural cavity, and interstitial emphysema of chest wall and axilla. Arrow points to bulging thin line, presumably visceral pleura. *Right*: Upright right lateral projection, one day after injury, showing air and fluid in minor fissure and smaller collection of air and fluid above.

discharged on the 30th day. Seven weeks after injury, fluoroscopy showed only some thickened pleura. Thereafter the patient was well and working.

CASE 3. A 21-year-old hospital orderly with no previous history of chest disease struck the right side of his chest against the steering wheel in an automobile accident. There was prompt hemoptysis. On admission of the patient to San Francisco Hospital, x-ray films taken 11 hours after injury showed fractures of the right first to fourth ribs, subcutaneous emphysema and right pneumothorax with a small collection of fluid over the diaphragm. An additional air-fluid level, 6 cm. in length in the postero-anterior view, occupied the position of the posterior portion of the minor fissure and reached the visceral pleura laterally. There a thin curved hair-line density, bulging laterally into the general pneumothorax space, apparently was the visceral pleura layer (Figure 4, *left*). In the lateral view, the characteristic dense posterior triangle was formed as the converging surfaces of the minor fissure joined the major fissure (Figure 4, *right*). An additional small fluid level, 6 cm. higher, probably represented a pool of fluid or blood caught on a band of pleural adhesions. Upon thoracentesis on the fourth day 550

cc. of bloody fluid and 450 cc. of gas were removed. The patient was discharged on the tenth day. In six weeks the pneumothorax had almost completely disappeared.

PATHOGENESIS

The pathogenesis of the minor fissure hemopneumothorax, in the absence of a surgically-explored patient, must remain speculative. As distinct from many kinds of general pneumothorax this lesion cannot be ascribed to perforation of the visceral pleura by a jagged end of a fractured rib. In one of the three patients, herein reported upon, there were no rib fractures on the right side, and in the other two the rib fractures did not reach as low as the level of the minor fissure. One would be led to postulate, instead, that the lesion arose from a bursting or tearing of the visceral pleura lining the minor fissure, with escape of air and blood into the minor fissure space. In discussing the mode of development of interlobar effusion, Rigler⁶ noted that a similar method, direct extension from the lung parenchyma through the visceral pleura lining the fissure, occurs in some inflammatory processes.

The subsequent persistence of the limitation of the air-and-blood collection to the minor fissure, without escape into the general pleural cavity, must be owing to previous peripheral sealing. Inflammatory sealing of the edges of the minor fissure (as may have occurred in Case 3 herein reported) must be relatively rare. However, in routine postmortem examinations, it is not uncommon to find an obliteration of the general pleural cavity which has not extended deep into the minor fissure, thus leaving the fissure as a free potential space.¹ Such a mechanism may well be the explanation of the limitation of the air-fluid collection to the minor fissure in Cases 1 and 2. If this explanation is correct, one would predict that similar traumatic air-and-fluid collections may be found in other fissures as well.

DIAGNOSIS

This lesion has shown itself to represent a diagnostic pitfall. In Case 1, the patient was presented with a previous x-ray impression of "lung cyst"; in Case 2, the patient was presented as having a "lung abscess." Factors which may lead to diagnostic error include, first, unfamiliarity with the existence of the lesion. The occurrence of an air-fluid level deep in the lung substance, apparently surrounded on all sides by lung parenchyma, and the localization to the posterior portion of the fissure, which extends well posterior to the hilum, also tend to confuse the picture. Finally, the persistence of the lesion over several weeks in relatively stable form increases the possibility of misinterpretation.

Once the lesion has been thought of, the diagnosis is relatively simple. The history of recent chest injury, perhaps with hemoptysis or rib fracture, followed by the discovery of an oval or spindle-shaped air-fluid collection in the plane of the minor fissure, should lead to careful examination of the relation of

the edges of the lesion to the recognizable position, if any, of the minor fissure. Two details of the appearance of the borders may be helpful. First, the posterior extremity of the lesion, in the lateral view, consists of a small dense triangle, symmetrically placed on and merging into, the posterior extremity of the minor fissure, at its junction with the major pulmonary fissure. Anteriorly, the lesion merges into the minor fissure by a long pointed lanceolate density. Second, the sharp outline of the gas-pleural surface superiorly contrasts with the hazy merging of the lower border of the fluid collection with the compressed or contused lung immediately below. Laminagraphy is helpful in showing some detail, but conventional views well exposed are likely to afford sufficient detail for diagnosis.

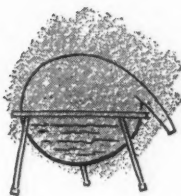
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ACKNOWLEDGMENT

The authors wish to express their gratitude to Dr. Dan Tucker, Chief Radiologist at Peralta Hospital, for the films in Case 2.

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The Surgical Treatment of Arteriosclerotic Occlusive Disease

Thromboendarterectomy in Selected Cases

CHARLES A. KRUSE, M.D., and FREDERICK G. KIRBY, M.D., Santa Monica

THERE IS AN INCREASING acceptance of the direct surgical treatment of obstructive arteriosclerosis, which fortunately is often segmental with a patent vessel above and below the diseased area. Because of this pathologic feature two methods—thromboendarterectomy or resection and replacement of the obstructed segment by a suitable vascular graft—have both been successfully used to restore normal circulation in the peripheral bed.^{1,4,9,13,14,17-19,21-26} More recently a third method—"by-passing" the diseased area with a homograft—suggests certain advantages.^{5,6} Which of these methods is superior awaits further clinical experience. Homograft (arterial) replacement in the treatment of aortic aneurysms seems well established^{7,20} and it has been used rather extensively in femoral arteriosclerotic occlusions.^{12,13,21,22} However, there may be an increasing tendency to utilize thromboendarterectomy for segmental occlusive disease of the lower aorta or the iliac arteries.^{4,8,10,27}

In arteriosclerosis, thromboendarterectomy is possible because of a pathological cleavage plane within the media. The accumulation of cholesterol, fatty acid salts and tissue debris creates a line of separation between the relatively uninvolved outer coat and the diseased intima of the artery.^{10,25} Gradual narrowing of the arterial lumen by the accumulation often leads to complete occlusion.

DISCUSSION AND CLINICAL OBSERVATIONS

Proper selection of the patient may be the major factor in determining a successful result. Localized segmental arterial thrombosis in a relatively young patient is a lesion in which an excellent result can be obtained by thromboendarterectomy.¹⁴

This is illustrated by the case of a 46-year-old man who for eight months had had symptoms of right thigh and hip claudication after walking 100 to 150 feet or on climbing 8 to 10 steps. A preoperative aortogram (Figure 1) showed occlusion of the right common iliac artery but fairly good filling of the

• Thromboendarterectomy appears to be the procedure of choice in the surgical treatment of localized obstructive arteriosclerosis in the aorto-iliac area in a relatively young patient.

Clinical follow-up over a three-year period demonstrated maintenance of a maximum benefit and suggested that the endarterectomized area will remain patent for the duration of the patient's life.

In younger patients, it seems logical to re-establish vascular continuity with their own tissues by a careful endarterectomy rather than by homograft replacement because of the reported incidence of late thrombosis in the latter.

"Diffuse" arteriosclerosis definitely limits the potential benefit or effectiveness of thromboendarterectomy. However, lumbar sympathectomy may still bring about definite benefit in particular cases.

The careful selection of patients with localized or segmental arteriosclerosis and well developed collateral circulation would seem to be the greatest factor in obtaining a maximum result by thromboendarterectomy.

TABLE 1.—Peripheral Pulsations (Graded on Basis of 1 to 4) in Case of 46-Year-Old Man Before and After Thromboendarterectomy

	Femoral	Posterior Tibial	Dorsalis Pedis
Right (before operation) *... 1		Questionable	Questionable
Right (after operation) †.... 4		4	4
Left (before and after operation) * † 4	4	4	4

* April 10, 1953.

† April 18, 1955.

Note: At examination three years after operation there was no significant change from the above findings.

femoral artery distally due to well developed collateral circulation. Thromboendarterectomy resulted in the immediate return of bounding peripheral pulses (Table 1). Oscillometric indices (Table 2) of the ischemic leg became equal to those of the opposite or "normal" leg. The surgical procedure and a postoperative aortogram are shown in Figure 1. Sympathectomy was not done. Four months after operation, without the permission of the physician, the patient decided to go deer hunting. He was able

Presented before the Section on General Surgery at the 85th Annual Session of the California Medical Association, Los Angeles, April 29 to May 2, 1956.

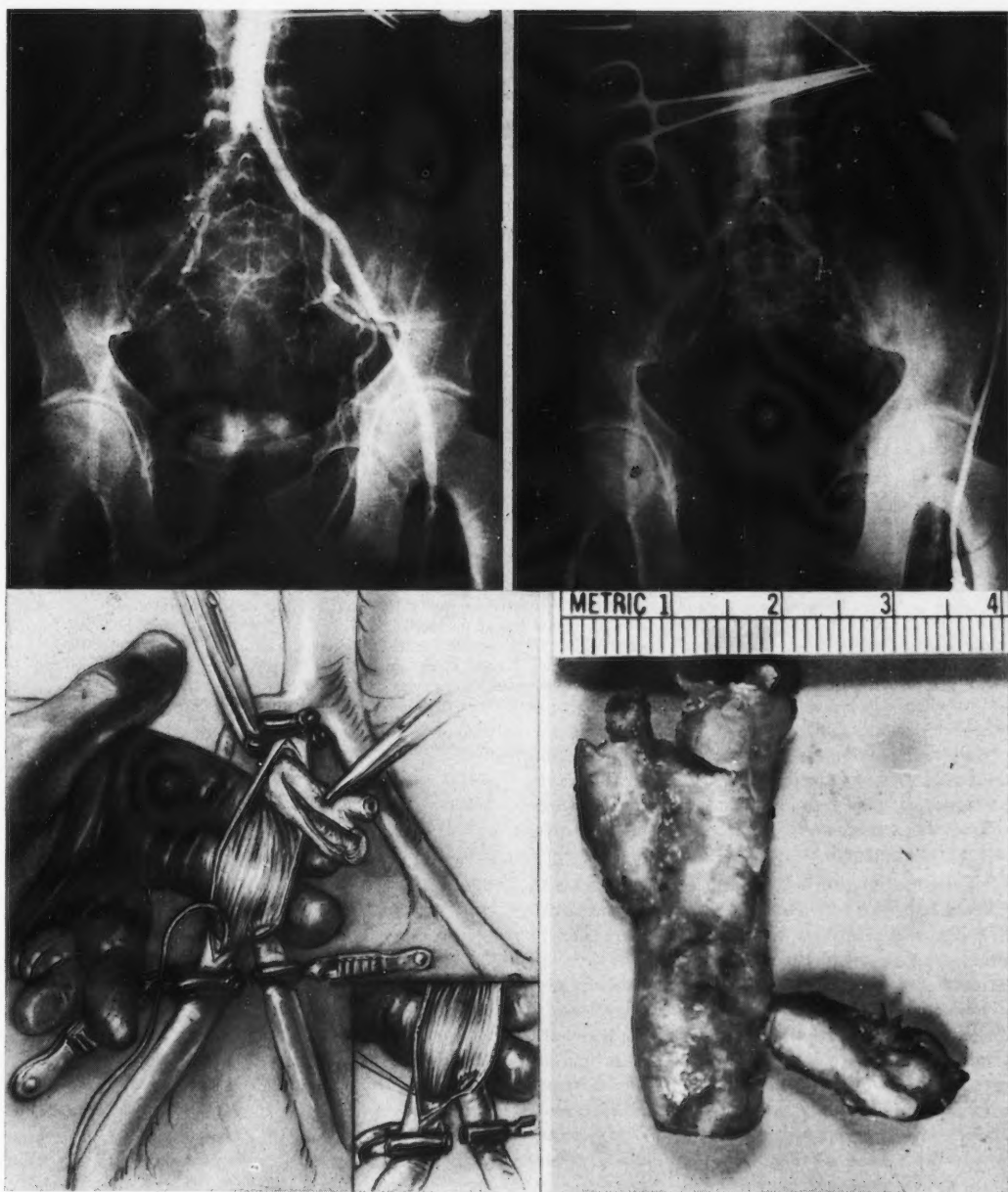


Figure 1.—*Upper left:* Preoperative aortogram showing occlusion of right common iliac artery but with fairly good filling of the femoral artery distally due to well developed collateral circulation. *Upper right:* Aortogram done three months postoperatively, showing widely patent right common iliac endarterectomized area. Note filling of right femoral artery. *Lower left:* Drawing illustrates surgical procedure in more detail. A large collateral lumbar artery is just proximal to the Blalock clamp. Note polyethylene catheter supplying heparin into distal arterial tree. An important step is the anchoring of the distal cut edge of the intima (see insert). *Lower right:* Posterior view of specimen removed from right common iliac artery and origin of right hypogastric artery. The pathological cleavage plane is well illustrated by this posterior view of the arteriosclerotic process.

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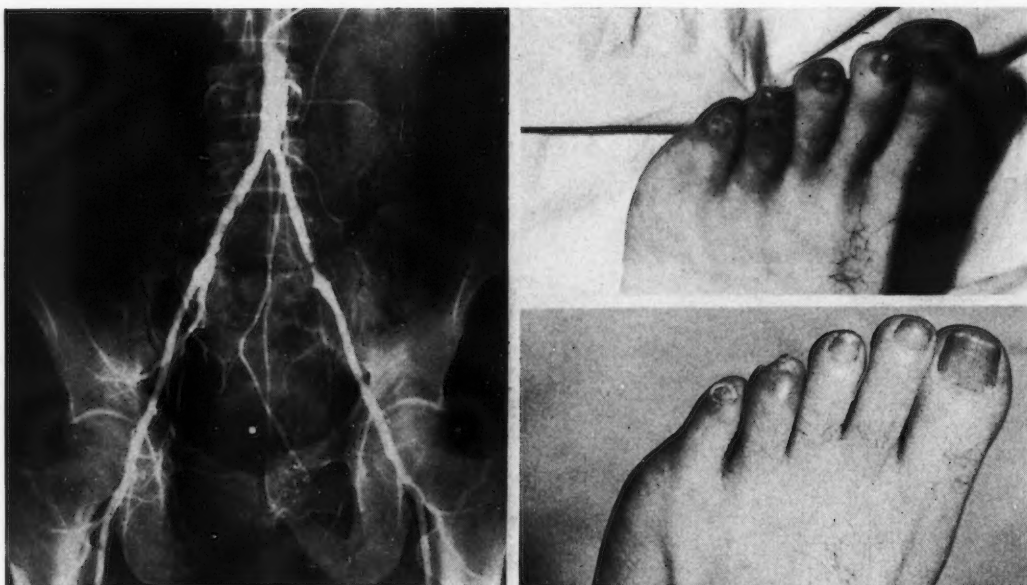


Figure 2.—Left: Preoperative aortogram showing a slightly narrowed terminal aorta with a left common iliac obstruction at the level of the hypogastric artery take-off. Distal filling is fairly good but the left hypogastric artery is barely visible. Upper right: Photograph of left foot showing "line of demarcation" or color change of distal 4th and 5th toes. Some cyanosis of the tip of the great toe was also present. Lower right: Same foot eleven weeks after endarterectomy of left common iliac artery. The "line of demarcation" or color change has almost disappeared. Necrotic soft tissues of the tip of the 4th toe along with the toenail have separated from the distal segment in the healing process.

to walk along mountain trails and to pack a deer on his shoulders down a mountain to camp. Three years after operation he regularly walked a mile to work without discomfort and appeared to be maintaining the maximum benefit.

The best indication for endarterectomy appears to be localized obstructive arteriosclerosis in the aorto-iliac area in a relatively young patient. This concept would tend to avoid the use of endarterectomy in patients of the older age group (60 and above) and in persons with so-called "diffuse" arteriosclerosis. The early diagnosis of the Leriche^{15,16} syndrome, when it initially involves only one common iliac artery, is the more ideal situation and safer to treat surgically from the point of technique. If, after endarterectomy, reocclusion should occur in a previously obstructed segment, the patient's distal circulation will probably be no worse due to the already well developed collateral circulation.¹⁸ Ischemic lesions of the nerves and muscles of the less involved limb with poorly developed collateral circulation have been noted following clamping of the aorta.⁴ Therefore if arterial obliterative disease of one common iliac artery is the cause of the complaint, with only partial involvement (or stenosis) of the opposite arterial tree, then perhaps it is better judgment to attack only the major side at one time, and stage the procedure so that a second operation,

TABLE 2.—Oscillometric Index in Case of 46-Year-Old Man Before and After Thromboendarterectomy

	Pressure of Cuff (mm. mercury)		
	120	100	80
—Units of Oscillation on Dial—			
Right mid-thigh (before operation) *	3/4	3/4	3/4
Right mid-thigh (after operation) †	2 1/2	3	2 1/2
Right mid-calf (before operation) *	2	2	2
Right mid-calf (after operation) †	4 1/2	6 1/2	7
Right ankle (before operation) *	Trace	Trace	Trace
Right ankle (after operation) †	3	3 1/2	3 1/2
Left mid-thigh (before and after operation) *†	2 1/2	4 1/2	2 1/2
Left mid-calf (before and after operation) *†	6	8	9
Left ankle (before and after operation) *†	2 1/2	3 1/2	3 1/2

* April 10, 1953.

† April 18, 1955.

Note: At examination three years after operation there was no significant change from the above findings.

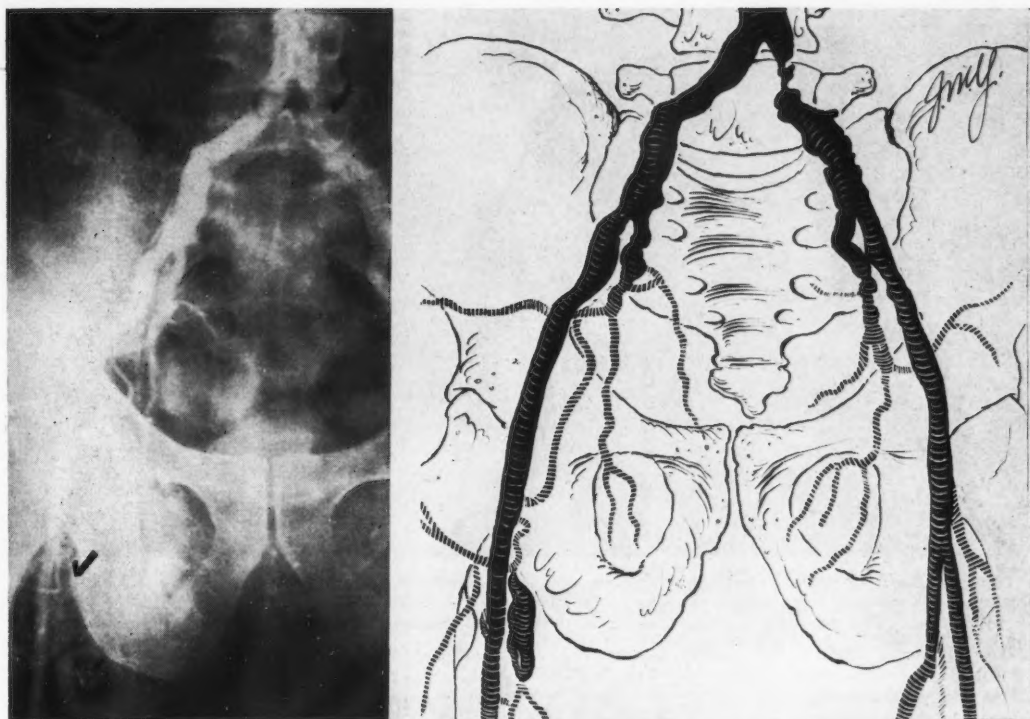


Figure 3.—*Left:* Aortogram showing occlusion of the right superficial femoral artery and pronounced calcification of the bifurcation of the terminal aorta with left common iliac artery stenosis. *Right:* Tracing to clarify aortogram.

if necessary on the basis of persisting or progressive symptoms on the opposite side, can be done later.

This clinical situation is exemplified by the case of a 40-year-old man who for a year and a half had had claudication in the left thigh after walking 100 to 150 feet and for two months had had almost continuous severe pain in the left fourth and fifth toes. The toes had been injured four years previously by a weight falling on them. A preoperative aortogram (Figure 2) showed a slightly narrowed terminal aorta with a left common iliac obstruction at the level at which the hypogastric artery branches from it. There was an absence of left femoral and pedal pulses although fair filling distally was noted on the aortogram. Endarterectomy of the common iliac artery and its bifurcation resulted in return of strong left femoral and pedal pulses. Symptoms were relieved immediately and the "line of demarcation" or color change of the two toes moved distally (Figure 2). Residual local (arteriolar) damage from the old injury still existed in the toes, however. Future arteriosclerotic changes in the terminal aorta or the right iliac vessels that produce symptoms may warrant surgical intervention in later years. However, the patient, after hospitalization of a week and a short convalescent period, returned to doing heavy

work. It seems more logical to treat such an area in a relatively young patient by endarterectomy (leaving his own tissues to form the new vascular channel) rather than to resect the obstructed segment and replace it by a homograft (with the possible sequelae of degeneration and blow-out or late thrombosis of the graft^{12,20}).

The advisability of extensive endarterectomy for obstructive femoral arteriosclerosis, as against reestablishing the vascular channel by a suitable graft, must be evaluated by further follow-up studies,^{8,10,12,20,21,22} although Cannon and Barker recently reported encouraging results with endarterectomy in selected cases.³ Crawford and DeBakey's recent presentation of the "by-pass operation" suggests distinct advantages over extensive endarterectomy or excision and replacement of the occluded artery by homograft in the superficial femoral area. This simpler procedure usually restores a normal pulsatile blood flow into a (patent) peripheral arterial bed and requires only minimal disturbance of the main artery and its collateral vessels adjacent to the region of occlusion (thereby causing only minimal jeopardy to the existing circulatory and functional capacity of the extremity).⁵ However, Hoyer and Warren¹² reported that at the time of ex-

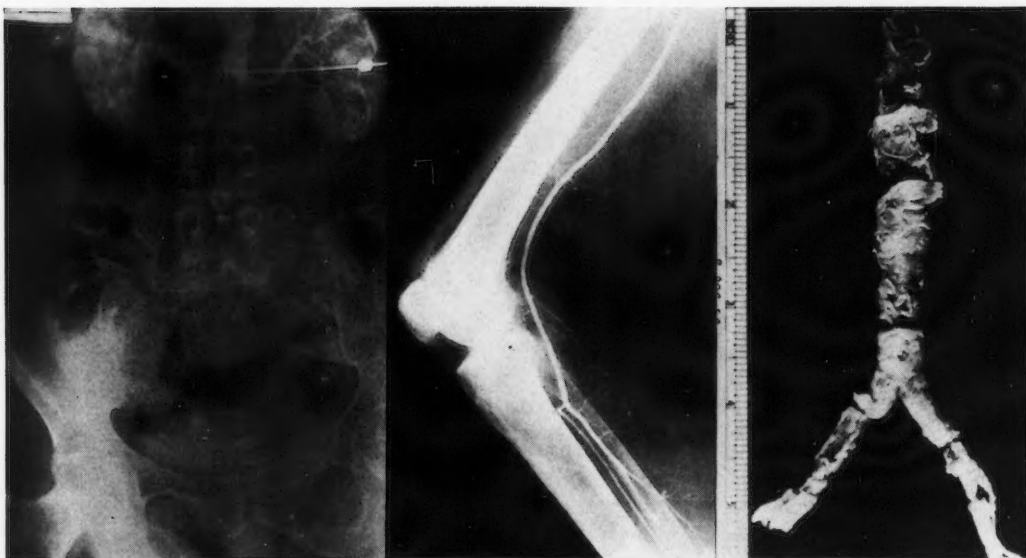


Figure 4.—*Left*: Preoperative aortogram showing complete occlusion of aorta at level of renal arteries. *Center*: Right femoral arteriogram in same patient showing patent distal vessels. *Right*: Specimen removed from aorta (extending into the external iliac arteries). Note the oblique proximal end of the thrombus corresponding to the aortogram configuration at the level of the left renal artery.

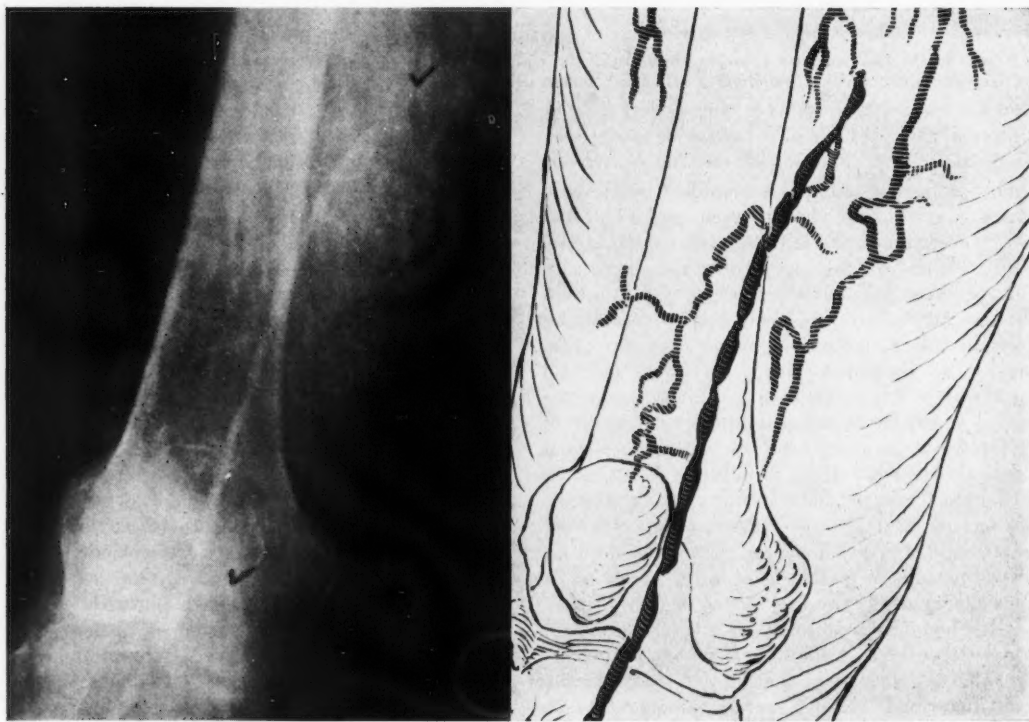


Figure 5.—*Left*: Arteriogram showing obstruction of right superficial femoral artery in 67-year-old woman. Note "moth-eaten" appearance (diffuse arteriosclerosis) of the popliteal artery. The tracing further illustrates areas of diffuse arteriosclerosis.

amination six months after operation approximately 70 per cent of homografts to the iliofemoral area were observed to be occluded. In two other cases closure occurred at one year and two and one-half years. No definite correlation of factors—type of anastomosis (end-to-end or end-to-side), age of patient, length of graft, pulse return within 24 hours, adequacy of the “run-off” area, etc.—could be made for predicting long-term patency or possible thrombosis by 6 to 7 months. Distal operative angiography is often essential to determine the patency of the popliteal artery and the system beyond before any femoral procedure^{2,3,5} is carried out.

Experience with a 55-year-old man having occlusion of the superficial femoral artery on the right side in addition to pronounced arteriosclerosis of the bifurcation of the terminal aorta and calcification on x-ray with left common iliac artery stenosis (Figure 3) exemplified the salient observations of Wylie and Gardner²⁷ that (1) occlusions of the superficial femoral arteries tend to be long, extending from the profunda femoris to the popliteal artery; (2) that, with occlusion at the femoral level, arteriosclerotic changes both proximal and distal to the occluded segment are frequent. (Extensive femoral endarterectomy in this case improved the right leg so that warmth, function and oscillometric reading were equal to or slightly better than those in the opposite extremity; but pedal pulses were not restored and there was no pronounced benefit.) Wylie and Gardner suggested that occlusions in the aorta, iliac arteries and even the common femoral arteries tend to remain localized to a short arterial segment because of the short distance between larger arterial branches and the size of these branches.

The case of a 64-year-old woman with claudication of both thighs of seven years' duration, illustrates this later statement. Preoperative aortogram (Figure 4) showed complete occlusion of the aorta at the level of the renal arteries. A right femoral arteriogram showed a small but patent femoral artery. After endarterectomy the feet were warm and there were bounding left femoral and pedal pulses and small right femoral and pedal pulses. Oscillometric readings correlated with the findings, having been zero or absent prior to this “near-maximal” application of endarterectomy. The patient was walking without claudication when last observed, nine months after operation. It is admitted that resection and replacement by homograft of the occluded area of this extent and in this age group may offer certain technical advantages over endarterectomy.

In diffuse arteriosclerosis when there is definite risk of distal arterial thrombosis and ultimate loss of limb, it is probably best to settle for lumbar sympathectomy, although it is recognized that this merely warms the feet and improves the color in a

favorable case without materially improving the claudication. Figure 5 shows obstruction of the right superficial femoral artery in a 67-year-old woman in whom the popliteal artery had a “moth-eaten” appearance (diffuse arteriosclerosis). After lumbar sympathectomy the foot was remarkably warm and pink. Claudication was no longer a serious complaint.

Lower thoracic and lumbar sympathectomy for obliterative disease of the lower aorta or the iliac arteries has been reported as giving satisfactory results during a five-year follow-up period—so far as satisfaction of the patient and warmth of limb was concerned (but poor as judged by incidence of relief of claudication or improvement of oscillometric findings).¹¹ The addition of lumbar sympathectomy to any endarterectomy (or homograft) procedure in which immediate return of good peripheral pulses is not obtained seems advisable.

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Discussion by WILEY F. BARKER, M.D., Los Angeles

In this presentation Dr. Kruse has exhibited a generally sound understanding of the principles of the surgical management of atherosclerotic obstructions in the peripheral arteries. Try as I might I could find no point of major disagreement, and therefore I would like to supplement another portion of Dr. Kruse's presentation.

I am sure that some of the audience are wondering just why we talk so much about endarterectomy as therapy for this disease, instead of discussing the use of homografts which has been given so much attention in print recently. As a result of experience with approximately 125 cases in which endarterectomy was performed and ten cases in which homografts were used for obstructive atherosclerosis, I believe that endarterectomy is usually the operation of choice. In certain circumstances, the use of grafts may have merit as a lesser undertaking for a patient with diffuse and extensive atherosclerosis who is a poor operative risk. In the younger patients, however, in whom a full and long-lasting rehabilitation can be expected, as in Dr. Kruse's first case, I favor endarterectomy for the following reasons:

1. Using a prosthesis inevitably involves the implantation of a biologic or plastic foreign body of considerable size.
2. The initial failures of both grafting and endar-

terectomy usually result from not extending the limits of the operative field above and below the segmental obstruction and thus neglecting to provide either an adequate in-put or a proper run-off of blood. I believe, however, that I have been able to perform endarterectomy in all circumstances in which a graft might have been successful and, at the same time, that an adequate flow was restored in some circumstances in which a graft alone without supplemental endarterectomy would certainly have failed.

3. Many investigators are now admitting late failures in the femoral artery grafts. For example, Dr. Kruse's quotation of Warren's figures of 70 per cent at six months. In approximately 100 follow-up studies, some extending as long as four and one-half years, of patients in whom flow was obtained during the early postoperative period, I have seen only one instance of late thrombosis in the segment operated upon.

4. We now have anatomic and radiologic evidence that endarterectomy reestablishes the blood flow from the main line into collateral vessels, and thus restores a more nearly physiological perfusion system than does a graft, which is, in essence, a simple shunt. The reconstitution of an adequate flow of blood may be the reason for resistance to late thrombosis.

Injuries Caused by Motor Vehicles

A Statistical Analysis

MILFORD X. ANDERSON, M.D., Los Angeles

IN THE FIRST 55 years of this century, 1,149,414 persons in the United States died in highway accidents. In all the wars of this nation in the 180 years of its existence, only 1,130,393 men were killed.

In 1955¹ motor vehicle accidents took about 38,500 lives in the United States—about 2,500 more than in the preceding year and the highest number in 14 years. However, on the basis of miles traveled, the 1955 rate was about the same as that of the previous year. Each year 100,000 persons are permanently injured and another 1,200,000 are temporarily disabled as a result of traffic accidents.

Motor vehicles cause more than two-fifths of the total number of deaths that occur in all kinds of accidents and a far greater number than any other kind of accident.² For every person killed by a motor vehicle, about 35 are disabled, temporarily or permanently.

Among males in early life, more than one-half of all accidental deaths are caused by the automobile.²

Between eight hundred and a thousand deaths a year result from injuries to drivers and passengers of motorcycles involved in accidents.³

A few deaths occur among bicycle riders.

Recent stress on measures to prevent injury to both pedestrian and motor vehicle occupants seems to necessitate a close study to determine the nature, location and types of injuries in order to develop better preventive measures.

The National Safety Council⁴ reported that in

Submitted May 14, 1956.

TABLE 1.—Data on Persons Received at Lincoln Heights Receiving Hospital After Injury in Traffic Accidents

Total patients treated at Lincoln Heights Receiving Hospital in one year, 1955.....	15,763
Total involved in traffic accidents.....	1,865
Passengers	1,587
Pedestrians	278
Dead on arrival or died in receiving hospital.....	15
Hospitalized for further care.....	338
Private hospitals	169
County hospital	169
Major injuries	352
Minor injuries	1,513
	1,865

• In an analysis of 6,024 injuries in 1,865 persons hurt or killed in traffic accidents, it was noted that the incidence of injuries to the head and lower extremities was 32 per cent in each instance. Twenty-five per cent of all fractures involved the head.

1949, 18 per cent of all drivers involved in fatal accidents had been drinking, compared with 17 per cent in 1950. Drivers under the "influence of alcohol" were reported in 8 per cent of all fatal cases in both 1949 and 1950.

Commissioner Donald S. Leonard of the Michigan State Police⁴ stated that "there is good evidence that one-third of drivers involved in accidents resulting in personal injuries are under the influence of alcohol." The Northwestern University Traffic Institute showed that nearly one-half of the drivers involved in accidents had been drinking.

MATERIAL AND METHODS

In the year 1955 there were 15,763 persons admitted to the Lincoln Heights branch of the Los Angeles receiving hospitals, 1,865 (12 per cent) of them because of injury in automobile accidents (Table 1). These patients constitute the material used in this study. Two hundred and seventy-eight were pedestrians and 1,587 were vehicle passengers. Fifteen patients were killed immediately or died very shortly after arriving at the emergency hospital and 338 persons were hospitalized for further care.

Almost 20 per cent of the persons in the present study who were injured enough to require medical care had been drinking. This figure is low compared to data in other series, for at the Lincoln

TABLE 2.—Incidence of Drinking in Persons Injured in Traffic Accidents

H.B.D.*	97
H.B.D., 1 plus.....	50
H.B.D., 2 plus.....	124
H.B.D., 3 plus.....	98
H.B.D., 4 plus.....	21
Total	390

* Had been drinking.

TABLE 3.—Classification of Cases in Which Persons in Traffic Accidents Had Ingested Alcohol Previously*

Classification	Gm. of Alcohol Per Kilogram of Brain	Percentage of Alcohol in Brain	Physiologic Effect
Trace	0.050 to 0.200	0.005 to 0.02	Normal
1 plus	0.200 to 1.000	0.02 to 0.10	Normal
Low 2 plus.....	1.000 to 1.500	0.10 to 0.15	Affected stage; may or may not be intoxicated
High 2 plus.....	1.500 to 2.500	0.15 to 0.25	Intoxicated
3 plus	2.500 to 4.000	0.25 to 0.40	Loss of equilibrium; intoxicated
4 plus	4.000 to 6.000	0.40 to 0.60	Unbalanced; intoxicated

*Courtesy of William C. Wilentz, M.D. (Am. Pract. and Digest of Treatment 4:22, January, 1953).

Heights hospital patients with head injuries are usually not listed as "had been drinking" (H.B.D.) because it is hard to differentiate which symptoms are due to head injury and which to drinking. In many cases of only minor injuries no notation is made as to whether the patient had been drinking or not. Ninety-eight persons were classified as three plus H.B.D. (the scale is from 1 to 4) and 21 persons who had passed out completely were classified as four plus H.B.D. at the time of the accident (see Table 2).

The classification of drinking used at Lincoln Heights is purely a clinical one and is not correlated with the results of intoximeter tests done by the police.

It is believed, however, that the clinical evaluation will correspond closely with that of Wilentz, which is reproduced as Table 3.

Patients receiving emergency care at the receiving hospital are treated within 5 to 20 minutes of the time of the injury in most cases, and because of this there is a very small incidence of shock. It is felt, however, that many of the patients go into shock after leaving the receiving hospital. Cerebral concussion was over three times as common as shock (Table 4).

The various types of injuries were classified as contusions, abrasions, lacerations, fractures, hematomas, avulsions, ecchymoses, whiplash injury and others.

Injuries were also classified according to their anatomical location—head, neck, thorax, abdomen, shoulder, arm, elbow, forearm, hand, knee, thigh,

TABLE 4.—Incidence of Shock and Concussion in 1,865 Persons Admitted to Hospital Because of Injury in Traffic Accidents

Shock:	
Mild	19
Moderate	19
Severe	8
	46
Concussion cerebri:	
Mild	74
Moderate	75
Severe	9
	158

TABLE 5.—Kinds of Injuries in 1,865 Persons Admitted to Hospitals After Traffic Accidents

Contusions	2,004
Abrasions	1,964
Lacerations	843
Fractures	465
Hematomas	262
Sprains	209
Avulsions	67
Ecchymoses	50
Whiplash injuries	49
Internal injuries	20
Dislocations	10
Amputations	2
Teeth	29
Loose	14
Fracture	13
Absent	2
Miscellaneous*	70
Total injuries	6,024

*Lumbrosacral sprain 1, sprained hip 1, contusions of sacrum 4, coccyx 3, iliac crest 22, buttocks 39.

TABLE 6.—Injuries to Head, Neck, Thoracic and Abdominal Regions in 1,865 Persons Admitted to Hospital After Traffic Accidents

	Con- tu- sions	Abra- sions	Lacera- tions	Hema- tomas	Frac- tures	Avul- sions	Ecchy- moses	Whiplash Injuries	Sprains	Internal Injuries
Head.....	555	468	591	166	121	38	20	....	....	....
Neck.....	11	8	11	1	14	1	....	49	57	....
Thoracic.....	215	69	7	2	74	1	4	1
Abdominal.....	49	15	2	2	18	1	14
Totals.....	830	560	611	171	227	40	25	49	57	15

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TABLE 7.—Injuries to Upper Extremities in 1,865 Persons Admitted to Hospital After Traffic Accidents

	Contu- sions	Abra- sions	Lacera- tions	Hema- tomas	Frac- tures	Avul- sions	Ecchy- moses	Sprains	Dislo- cations	Ampu- tations	
Shoulder.....	86	54	2	1	21	1	1	19	1	...	
Arm.....	66	61	12	7	19	2	5	2	...	...
Elbow.....	101	159	29	4	10	2	1	5	1	...	
Forearm.....	79	110	20	10	30	3	...	16	1	...	
Hand.....	81	155	37	7	13	10	1	7	...	2	
Totals.....	413	539	100	29	93	18	8	49	3	2	1254

TABLE 8.—Injuries to Lower Extremities in 1,865 Persons Admitted to Hospital After Traffic Accidents

	Contu- sions	Abra- sions	Lacera- tions	Hema- tomas	Frac- tures	Avul- sions	Ecchy- moses	Sprains	Dislo- cations	
Thigh.....	122	79	8	9	40	...	3	4	4	
Knee.....	299	482	62	15	21	2	4	13	...	
Leg.....	165	174	34	28	59	2	9	2	...	
Ankles.....	59	69	8	6	24	2	...	24	2	
Feet.....	42	28	8	4	8	3	1	5	1	
Totals.....	687	832	120	62	152	9	17	48	7	1934

TABLE 9.—Injuries to Spinous Region in 1,865 Persons Admitted to Hospital After Traffic Accidents

	Contu- sions	Abra- sions	Lacera- tions	Frac- tures	Whiplash Injuries	Sprains	
Cervical.....	2	...	...	14	49	7	
Thoracic.....	18	8	2	6	...	9	
Lumbar.....	54	25	1	7	...	39	
Totals.....	74	33	3	27	49	55	241

leg, ankle and feet. Injuries to the spinal region were listed as cervical, thoracic or lumbar (only one classification for each patient).

Multiple injuries of the same type within one body region, such as abrasions or contusions of both arms, or both shoulders or both knees were recorded as a single injury.

The diagnosis of fracture was a clinical one, as x-ray films are not taken at the emergency hospital. The diagnosis of fracture was no doubt proved by x-ray in most of these patients, and fractures not suspected at the time of emergency treatment were no doubt found later by x-ray examination.

A total of 6,024 injuries was noted in the 1,865 patients treated. A compilation of the types of injuries in relation to the various parts of the body affected is listed in Tables 6, 7, 8 and 9.

About 66 per cent of all the injuries were contusions and abrasions. Lacerations, fractures, hematomas, sprains etc. made up the other 34 per cent. About 33 per cent of the total were head injuries. The lower extremities received 53 per cent more injuries than the upper.

A total of 472 fractures were suspected—420 simple, 44 compound and 8 fracture-dislocation. The

TABLE 10.—Distribution of Fractures in 1,865 Persons Admitted to Hospital After Traffic Accidents

	Simple	Compound	Fracture Dislocation	
Skull fracture.....	78	...	...
Fractured nose.....	22	3	...	
Fractured jaw.....	16	2	...	
Fractured clavicle....	17	...	...
Fractured scapula....	4	...	...
Fractured humerus....	17	2	...	
Fractured elbow.....	10	...	...
Fractured forearm, one bone.....	25	...	2*	
Fractured forearm, two bones.....	3	...	...
Fractured hand.....	11	2	...	
Fractured sternum....	5	...	...
Fractured ribs.....	63	...	...
Fractured pelvis.....	11	...	...
Fractured femur.....	36	3	1	
Fractured patella....	10	1	...	
Fractured knee.....	9	1	...	
Fractured leg.....	31	28	...	
Fractured ankle.....	20	1	3	
Fractured foot.....	5	1	2	
Spinal fractures:				
Cervical.....	14	...	...
Thoracic.....	6	...	...
Lumbar.....	7	...	...
Totals.....	420	44	8	472

*Radius.

anatomical location of fractures is shown in Table 10. Of the total number of fractures, 121 involved the head.

In addition there were six dislocations and two acromioclavicular separations. There were two amputations of a finger. Broken teeth were associated with contusions and abrasions of the head and neck in 13 instances. In addition there were 14 loose teeth and in two instances teeth were missing.

DISCUSSION

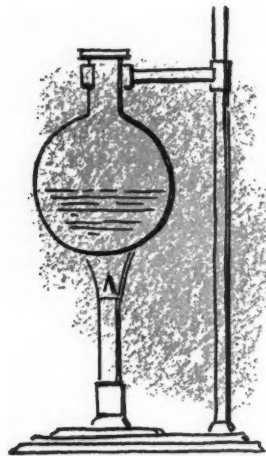
The great preponderance of head and lower extremity injuries illustrates once more the necessity for some device to hold the person firmly in the vehicle. At present, seat belts are no doubt the most practical means. However, in the near future shoulder harness and other more effective means of stabilization will no doubt become available.

It is very seldom that passengers are killed who remain in the vehicle at the time of the accident. The incidence of serious injuries and death can no doubt be greatly reduced by means of better engineering of automobiles. The elimination of projecting handles on the sides and on the dash and better padding of the interior would eliminate many injuries.

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CASE REPORTS

Treatment of Disseminated Coccidioidomycosis With Amphotericin B

Report of a Case

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AMPHOTERICIN B, an antibiotic formed by a species of *Streptomyces* isolated from a soil sample obtained near the Orinoco River in South America, has been shown to possess *in vivo* activity against experimental coccidioidal infections in mice.¹ This new antibiotic is similar in its action to nystatin, which is also coccidioidocidal *in vitro*, but whereas nystatin is almost totally unabsorbed from the gastrointestinal tract, amphotericin B produces detectable blood levels when administered by mouth.² This communication reports a case in which amphotericin B was administered by mouth to a patient with a chronic disfiguring coccidioidal granuloma of the face.

CASE REPORT

A 27-year-old white man came to Kern County, California, in 1947, and worked in the hay fields for two years, during which time he had no unusual respiratory illnesses. In 1949, there appeared on his right cheek a tender swelling, from which *Coccidioides immitis* was isolated by culture and biopsy. In the ensuing years, the granuloma spread to involve almost the whole right side of the face. The complement fixation for coccidioidal infection rose from 1+ in dilution of 1:32 in 1950 to 1+ in dilution of 1:128 in 1953. Results of precipitin tests also remained positive for four years, which was at that time a new record of persistence of precipitins (which usually disappear within a few months after primary infections, even in the presence of dissemination).

In early 1954 the patient was treated for a while with ethyl vanillate, but could not tolerate the large doses required for a man of his size (80 grams per day—or 40 half-gram capsules every six hours), although there was a temporary remission following the course of treatment.

In January, 1956, the patient had the worst exacerbation of the disease that had occurred up to that time. Although his general condition, nutrition, and strength remained good, the facial lesion became unsightly in the extreme (Figure 1). The whole right



Figure 1.—Left: Coccidioidal granuloma of the face of seven years' duration before treatment with amphotericin B. Great edema, inflammation and draining sinuses were present. Right: After treatment there was extensive scar tissue but edema and acute inflammation subsided and sinuses healed.

cheek, right eyebrow, nose, and lips became involved in the inflammation and granuloma. The nose became widened. Sinuses discharged into the nares and into the mouth, as well as on the external surface. The lips became thick and edematous and the voice hoarse. The appearance was little less than terrifying.

On February 24, 1956, therapy with amphotericin B was begun, 2.4 gm. being given by mouth daily (four capsules of 200 mg. each every eight hours). Two days later the patient reported excitedly that the lesions were drying up and edema subsiding. On examination the report was confirmed. Except for short interruptions when the supply was inadequate, treatment was continued for three months, a

Submitted December 13, 1956.

TABLE 1.—Urine, Blood, and Liver Function Studies During and After Administration of Amphotericin B

Date	Blood													Liver Function Tests		
	Urine				Hemo- globin (Gm. per 100 cc.)	Leuko- cytes (Per cu. mm.)	Poly- morpho- nuclear	Eosino- phils	Lympho- cytes	Mono- cytes	Sedimen- tation Rate (Mm. in 1 hr.)	Cephalin Floc- culation			Thymol Turbidity	
	Albu- min	Sugar	Leuko- cytes (Per Field)	Erythro- cytes (Per Field)								24 hr.	48 hr.	Turbidity		
March 5	0	0	1-3	2-4	14.6	9,700	57	2	39	2	41	0	0	.....	
March 22	0	0	occ	0	16.4	12,750	58	1	40	1	27	0	1+	.....	
April 30	0	0	occ	0	16.6	9,350	58	....	38	4	25	0	2+	.....	
May 10	0	0	occ	0	16.7	11,000	61	....	38	1	7	....	....	.....
June 8	0	0	occ	0	16.8	9,050	54	....	41	4	13	....	....	.....
July 27	....	....	....	....	....	.....	....	....	....	....	....	2+	3+	9 units

total of 200 gm. being given. Acute inflammation subsided completely. Disfigurement from scar tissue was still considerable, but edema disappeared and all sinuses healed. He said that he felt better than he had for several years, and he was able to return to work for the first time since the illness began in 1949.

There were no symptoms suggesting toxicity, although the cephalin flocculation reaction and thymol turbidity test reaction became mildly abnormal (Table 1). The titer of complement fixation for coccidioid disease began to regress, falling to 2+ at 1:32. The erythrocyte sedimentation rate (Wintrobe) decreased from 41 mm. in one hour to 7 mm.

DISCUSSION

Lest the purpose of this report be misunderstood, let it be said that it is no new thing to describe a solitary case in which one medication or another is said to "cure" coccidioid granuloma. For nearly half a century there have been isolated reports of dramatic results with drugs now long discredited. The natural history of coccidioid disease is so variable that no conclusions should be drawn from a single case. Indeed, Mackler has aptly termed coccidioidomycosis "a disease *without* a natural history."³ Were amphotericin B in larger supply, no note would be made of its use in just one case. Nevertheless, since the need for an efficacious therapy in disseminated coccidioidomycosis is so pressing, every lead must be followed up until the question of a drug's usefulness can be answered one way or another. Is amphotericin B of value in the treatment of disseminated coccidioidomycosis? This paper is intended to raise the question, not to answer it.

SUMMARY

Improvement in a case of extensive coccidioid granuloma of the face coincided with treatment with amphotericin B, an antifungal agent derived from *Streptomyces*.

ACKNOWLEDGMENTS

Amphotericin B was supplied through the courtesy of Dr. Gavin Hildick-Smith, Associate Medical Director, Squibb Institute for Medical Research, New Brunswick, New Jersey.

Facilities for the serologic tests were provided by the support of the Commission on Acute Respiratory Diseases of the

Armed Forces Epidemiologic Board at the School of Public Health, University of California, Berkeley, California.

Laboratory studies and photography were done through the courtesy of the Madera County Hospital and Dr. Rex Blumhagen, Madera County Health Officer, Madera, California.

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Fatal Disseminated Moniliasis During Prolonged Antibiotic Therapy

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ALTHOUGH RECENTLY there has been an increasing number of reports regarding fungus infections complicating antibiotic therapy, the number of cases of disseminated moniliasis reported with septicemia or meningitis is still small. Such a case occurred at the Los Angeles County General Hospital during the intensive and prolonged treatment necessary in meningitis due to *Hemophilus influenzae*. Until recently, only three patients have been reported to have had disseminated moniliasis and survived. It is not certain that the therapy used in these cases contributed to the recovery of the patient, but therapeutic agents that are apparently more effective are now becoming available. Awareness and recognition of moniliasis are, therefore, of greater importance now than they have been in the past.

REPORT OF A CASE

A 13-month-old Caucasian girl was admitted to the Los Angeles County General Hospital, Commu-

From the Service of Dr. Albert G. Bower, Chief Physician, Communicable Disease Hospital, Los Angeles County General Hospital, Los Angeles 33.

Submitted June 18, 1956.

nicable Disease Service, on February 23, 1953, with a history of a cold of seven days' duration and irritability, anorexia, drowsiness and fever of two days' duration. The patient became stuporous on February 23. Spinal fluid aspirated at that time was purulent.

The patient appeared well-nourished and semicomatose. The temperature was 100° F., the pulse rate 152 and respirations 34 per minute. The vessels of the tympanic membranes and throat were engorged.

The cerebrospinal fluid contained 4,744 cells per cu. mm., 98 per cent of which were polymorphonuclear cells. The reaction to a Pandy test was 3 plus. The hemoglobin content of the blood was 12.0 gm. per 100 cc. Leukocytes numbered 16,700 per cu. mm., 88 per cent of which were polymorphonuclear cells; *Hemophilus influenzae*, type B, grew on cultures of the cerebrospinal fluid and blood.

Initial treatment consisted of administration of chloramphenicol and a sulfonamide mixture consisting of equal parts of sulfadiazine and sulfisomidine (Elkosin®), and general supportive measures including intravenous infusion of fluids, aqueous adrenal extract and vitamins. Streptomycin was added on February 24, and when sensitivity studies revealed the organism to be highly sensitive to oxytetracycline (Terramycin®), it was also added on February 27. The patient's condition remained critical until February 28, then improved. Chloramphenicol was discontinued February 28, and streptomycin on March 7. Cultures of cerebrospinal fluid removed after February 25 were negative for pathogenic organisms.

Emesis began on March 1. The temperature continued to range from 99.6° to 101.2° F. daily. Moderate nuchal rigidity was present on March 20. On March 23, the cerebrospinal fluid, which had been clearing, revealed an increase in the percentage of polymorphonuclear cells from 4 to 20. Because the patient vomited all medications given by mouth, oxytetracycline was discontinued on March 24, and chloramphenicol, intramuscularly, was started. On March 28, procaine penicillin was begun. Administration of fluids intravenously was started again on April 1 because of increased vomiting.

Subdural aspiration was done on April 4 and 5 cc. of xanthochromic fluid was withdrawn on the left and 10 cc. on the right. An electroencephalogram on April 7 was within normal limits. On April 8, after the patient had been afebrile for four days, the temperature rose to 101.4° F. and on April 9 to 103° F. The patient was quite lethargic. An x-ray film of the chest showed increased bronchovascular markings throughout. Postfrontal burr holes were made, and there was more than 50 cc. of xanthochromic subdural fluid and a well-formed membrane on both sides. No organisms grew on cultures of the fluid.

The patient seemed much brighter immediately after operation. Chloramphenicol and the sulfonamide mixture were continued postoperatively. On April 10, the patient became lethargic and on April

13 unconscious. Respiratory arrest followed in an hour. She was given artificial respiration and was placed in a respirator. Tracheotomy was done. Subdural fluid was removed through each burr hole the same day, and *Candida albicans* grew on cultures of it. This organism also grew on cultures of spinal fluid obtained April 14. The patient was maintained, as she had been since April 1, on infusions of fluids, blood, aqueous adrenal extract, potassium chloride and vitamins. The temperature gradually declined to 96° F. during the next two days. The patient died suddenly on April 16.

At autopsy the leptomeninges were observed to be thickened, with exudate along the course of the vessels. There was a well-formed membrane lining the subdural space over the brain. Multiple small abscesses of the brain, heart and kidneys contained colonies of ovoid budding cells, some with and others without associated necrosis and inflammation. The heart was moderately dilated. Focal areas of coagulation necrosis involved most of the adrenals, both cortex and medulla. The liver was enlarged, weighing 770 grams, and pronounced vacuolization was noted microscopically. Diffuse hemorrhagic areas were present in all lobes of the lungs, consisting of intra-alveolar hemorrhage without cellular infiltration. The bronchi were normal. There was an acute superficial ulcer of the lesser curvature of the stomach.

Candida albicans was cultured from the meninges, lung, liver and spleen at autopsy. The organisms cultured from the meninges were morphologically typical and the reactions on various carbohydrates were typical. A suspension of these organisms was injected intravenously into rabbits, and they died within five days.

The final diagnoses were: (1) Leptomenigitis, acute, due to *Hemophilus influenzae*. (2) Septicemia due to *Candida albicans*, with focal abscesses of the brain, heart, and kidneys; leptomenigitis; and infarction of the adrenals.

DISCUSSION

Although the extensive antibiotic therapy cannot be indicted as being the only factor in the dissemination of monilial infection in this patient, it must certainly be most strongly suspected. Debility following prolonged anorexia and vomiting, requiring maintenance on intravenous fluids, was probably also an important factor.

The pathogenesis of monilial infection following antibiotic therapy has been discussed by a number of observers.^{6,8,26} Three theories have been proposed to account for the growth of monilia: (1) suppression of the normal flora with substitution; (2) production of a nutritional disturbance, such as a vitamin B deficiency, with resultant openings in the mucous membranes and secondary infection; and (3) direct stimulation.^{6,8,26}

Pertinent in consideration of these theories is the experimental demonstration by Seligmann that in-

traperitoneal injection of *Candida albicans* into mice, nonpathogenic alone, was fatal in almost every instance when chlortetracycline was also given. Seligmann interpreted this as indicating a lowering of the animals' resistance to monilial infection by chlortetracycline.¹⁹

Zimmerman felt that the dissemination of monilia "is usually attributable to a combination of three factors: A general state of increased susceptibility incident to the primary disease; a local lesion, usually in the alimentary or respiratory tract, which the organism uses as a portal of entry; and an ecologic disturbance brought about by the various combinations of antibiotics, hormones, etc."²⁷

Carpenter² showed a real increase in the number of yeastlike fungi isolated from pediatric patients during the antibiotic era, from 1 in 2,689 cultures in 1940, to 145 in 5,823 cultures in 1951. Both Newcomer¹³ and Loh⁹ demonstrated the rapid increase in yeasts in the stools of most patients receiving tetracycline antibiotics.

Gastrointestinal symptoms and thrush may follow within one to four days of beginning antibiotic therapy. Positive sputum cultures in monilial bronchomycosis have been found in 7 to 16 days after the beginning of antibiotic therapy, and positive blood cultures have been obtained in disseminated infections in 10 to 23 days.

References to the treatment of disseminated moniliasis are few, and reports of successful treatment are rare. The dearth of discussion probably is owing to the widely held opinion, until recently, at least, that there was no effective treatment. The measures reported as having produced some improvement, however, have been summarized below, with full recognition that improvement in these individual cases does not prove the efficacy of the treatment used. Treatment of local moniliasis and results of experimental work have also been mentioned where there is possible application to the treatment of disseminated moniliasis.

Discontinuance of a suspected drug is a prime part of the treatment of moniliasis. This, with only supportive measures, has been reported to have been followed by improvement in a patient in whom monilial pneumonia developed following chlortetracycline therapy.²⁵

The possibility of a vitamin deficiency would indicate the administration of vitamins. The daily administration of vitamin B complex parenterally is stated to have resulted in decreased incidence and more rapid resolution of side effects on mucous membranes.⁵

Iodides have been recommended for many years. It is usually suggested that they be given in increasing doses over prolonged periods. They have been given as potassium iodide orally, as hydriodic acid and as sodium iodide IV. Potassium iodide, 10 to 15 drops of the saturated solution orally three times a day for six months, was reported to have resulted in remarkable improvement in bronchomycosis of four

years' duration.¹¹ Iodides were used in the treatment of two of the surviving patients with disseminated moniliasis mentioned below. In the second patient, however, although the iodide preparations were used intensively throughout the course of the patient's illness, recovery was attributed to antibiotic therapy.¹⁵

Gentian violet intravenously,²³ autogenous monilial vaccine^{22,26} and courses of brilliant green and methylene blue aerosol inhalation⁷ have been used in bronchopulmonary moniliasis with improvement reported.

One patient, a 25-year-old male with ependymitis and meningitis due to *Candida albicans*, who was thought to have had syphilis of the central nervous system of 11 months' duration, was given bismuth and potassium iodide and the temperature returned to normal and there was subjective and objective improvement. The patient received 13 more injections and survived nine months after discharge from the hospital.⁴

In a review of the literature reports were found of only three cases in which a patient with a diagnosis of disseminated moniliasis with septicemia or meningitis survived. Blood cultures positive for monilia were obtained from the patient reported by Wessler and Browne, a 43-year-old man, on five occasions during an episode of severe bronchitis. He was given thymol, 0.5 gm., and syrup of hydriodic acid, 4 cc., twice daily. Blood cultures became sterile and the patient was living at the date of report, eight months later.²⁴

In 1947, the first case of monilial meningitis with recovery was reported by Zimmerman and co-workers.²⁸ Monilia was found on both smear and culture of the cerebrospinal fluid. The patient, a 28-year-old man, was given potassium iodide in gradually increasing doses orally for four months, sodium iodide, 1 to 2 gm. intravenously daily, gentian violet by mouth, sulfadiazine, and streptomycin, 0.1 to 0.5 gm. every four hours, and .025 and .050 gm. intraspinally daily for seven days. The patient appeared to respond to streptomycin. Four months later he was apparently cured.²⁸

Schaberg and co-workers have described a third case, that of a 24-year-old man with poliomyelitis. *Candida albicans* grew on two blood cultures and on a culture of urine. The patient was treated with sulfathiazole and undecylenic acid without apparent effect. He was then started on cycloheximide (Actidione) at a daily dose of 40 mg. intramuscularly for four days, then 60 mg. per day for over two months, and the temperature returned to normal. A blood culture after one week of cycloheximide therapy was sterile. However, *Candida albicans* still grew on cultures of the urine repeatedly up to the time of the report, a year later. The patient was also treated with a course of stilbamidine intravenously without effect on the pyuria. His general condition at the time of the report was good.¹⁸

The treatment of moniliasis appears to have been completely changed, however, by the introduction of nystatin (Mycostatin®). Experimentally, Brown and

co-workers showed nystatin to give significant protection against the consistently lethal combination of *Candida albicans* and chlortetracycline intraperitoneally in mice.¹ Sternberg and co-workers, working with mice infected by intravenous injection of *Candida albicans*, noted that 34 of 48 untreated mice died, while only 6 of 79 treated with nystatin died and 6 were "biological cures." Almost all animals in the untreated group had renal infection, compared with approximately 50 per cent in the treated group.²¹ Similar results were reported by Drouhet in systemic infections in rabbits.³ Further studies by Sternberg²¹ and Newcomer¹³ demonstrated that the daily oral administration of 1 gm. of nystatin reduced or eliminated yeastlike fungi from the stools of 40 of 42 patients. The concurrent administration of tetracycline, oxytetracycline, or chlortetracycline did not alter this effect.

Nystatin was also reported to be very effective in the 35 patients with generalized or localized infections with *Candida albicans* who were reported by Drouhet. There was clearing of digestive and urinary disturbances, and disappearance of oral lesions. "The organisms disappeared from, or were diminished in, the mouth, blood, stools, and urine four or five days after the administration of the antibiotic, the dosage varying between 0.2 and 1 gm. a day."²³

Nystatin was used locally by Sloane²⁰ for the treatment of cutaneous and mucous membrane monilial infection, and orally by Robinson¹⁶ and Sarewitz¹⁷ for cutaneous, vaginal, and urinary monilial infections, with rapid improvement. The latter used 0.5 gm. three to four times a day. Relapse on discontinuance of treatment was frequent, requiring retreatment.

Two other substances have also been used in an attempt to prevent monilial complications. Esters of paraben (parahydroxybenzoic acid), which have been employed as preservatives in foods and drugs for years, were given orally with chlortetracycline (142 mg. of methyl paraben and 35.5 mg. of propyl paraben in every 250 mg. capsule of chlortetracycline). Monilia developed in the stools of 63 per cent of patients taking chlortetracycline alone and in only 13 per cent of patients taking chlortetracycline with paraben.¹⁰ Undecylenic acid by mouth has been used in an attempt to prevent the side effects of chlortetracycline, chloramphenicol and oxytetracycline. There were no failures in 20 patients who received undecylenic acid from the time the antibiotics were started; 12 of 45 controls developed symptoms. A dosage of 0.44 gm. with every 250 mg. of other antibiotic was suggested. Undecylenic acid did not eliminate the growth of monilia in the stool or pharynx, but did seem to prevent the fungus from attacking the body tissues. In the light of a report that undecylenic acid by mouth decreased the growth of monilia in thrush vaginitis and brought about definite relief of symptoms, and considering previous work on psoriasis,¹⁴ it was felt that the medication acted by way of the blood stream.¹²

SUMMARY

A fatal case of disseminated moniliasis occurring during the prolonged treatment of Hemophilus influenzae meningitis with subdural effusion is presented. The case was similar to most other reported cases of disseminated moniliasis in that the general condition of the patient was extremely poor at the time of dissemination. Review of the literature indicates that, although treatment of disseminated moniliasis has not been very successful in the past, several types of therapy have been reported to have resulted in some improvement in individual cases. These include treatment with iodides, bismuth, thymol, streptomycin and cycloheximide. The experimental and clinical effectiveness of nystatin, however, would indicate that it will probably replace all other therapy. Three cases of survival following disseminated moniliasis prior to nystatin therapy are cited.

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Agenesis of the Lung and Contralateral Diaphragmatic Hernia in a Newborn Infant

JOHN CHAMBERS, M.D., and
CHESTER TANCREDI, M.D., San Diego

CONGENITAL ABSENCE OF A LUNG is a relatively rare anomaly. It is compatible with normal development and longevity. Congenital defects associated with it frequently cause death in the neonatal period. In the case presented here, congenital right pulmonary agenesis was associated with left Morgagni foramen diaphragmatic hernia in a newborn child. The baby lived after surgical repair of the hernia. No similar case has been described in the literature.

REPORT OF A CASE

The patient, a 6 pound, 3 ounce girl, was born by outlet forceps delivery with episiotomy. It was noted that the feet remained cyanotic during the first day of life. An incubator was used and oxygen was given. The infant was discharged the next day, with the mother, the color being reported as normal.

Two weeks later she was readmitted to the hospital with a history of coryza for a week and increasingly difficult breathing and cyanosis for the preceding few days. Feeding had also been poor.

On examination, slight cyanosis and noisy respiration was noted. There were diminished breath sounds over the right side of the chest. The trachea was midline. There was questionable retraction of the chest on the right side, and the heart sounds were heard on the right.

Postero-anterior and right lateral films of the chest (Figure 1) showed opacity on the right, with

the heart retracted to that side. At the left cardiophrenic angle there was a cystic, air-containing area which apparently was bowel above the diaphragm.

With the patient under oxygen-ether anesthesia, bronchoscopic examination was carried out with the 3-16 Jesberg bronchoscope. The main carina was observed to be rotated 30 degrees clockwise. The right main stem bronchus ended in a blind stump about 0.5 cm. in length. After the bronchoscope was removed an endotracheal catheter was inserted and the infant's condition became precarious, oxygenation being carried out by quite forcefully squeezing the anesthesia bag.*

A midline upper abdominal incision was made and a defect two and a half inches long in the anterior part of the left diaphragm, in the usual area of the foramen of Morgagni, was observed. A peritoneal sac was present. The defect was closed with interrupted silk imbricating the sac. The pleural cavity was not opened. As the defect was closed the pronounced paradoxical motion of the diaphragmatic defect was corrected and the infant's condition immediately improved. The abdominal wall was closed in layers with silk.

The postoperative course was uneventful. Oxygen was given for four days, aerosol being used for humidification. An x-ray film of the chest showed no hernia. The patient was discharged four days after the operation. She developed normally but had frequent episodes of respiratory tract infection which necessitated hospitalization five times between the sixth and the eleventh month of life. On each occasion the disease was accompanied by difficult breathing and wheezing, and in spite of administration of antibiotics and inhalation of steam at home, invariably progressed to bronchiolitis with cyanosis. Oxygen-

*Dr. Paul Pentecost administered the anesthesia.

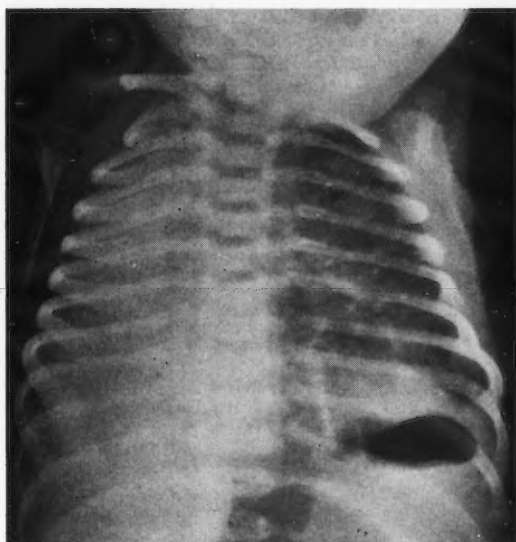
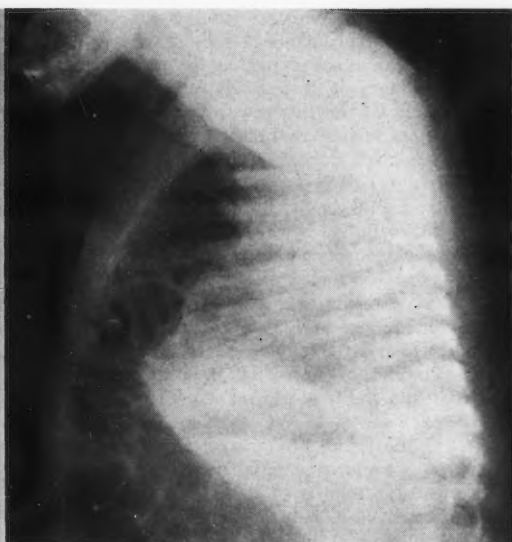


Figure 1.—X-ray films showing herniation of the bowel through the anterior portion of the diaphragm and the absence of the right lung.



aerosol therapy was given each time and the patient recovered in three to four days. As she grew older the attacks of respiratory tract disease became less severe. When free of infection she was alert and active. The growth pattern was within normal limits. Figure 2 is an x-ray film of the chest taken two years after the operation.

DISCUSSION

Congenital absence of the lung has been reported with increasing frequency in recent years. Valle in January, 1955,⁵ reviewed the literature and assembled data on 120 cases, about half of which were reported the 12 previous years. The oldest patient of record died at the age of 72 years. Although the absence of a lung might conceivably decrease a patient's ability to resist respiratory infections, survival in this condition depends mainly on the presence of other congenital anomalies. Despite the frequent association of other anomalies with pulmonary agenesis, there was only one other diaphragmatic anomaly mentioned in the literature. This was in the case, reported by Hanson² in 1901, of an infant surviving only about 15 minutes with agenesis of the left lung, which at autopsy "looked like a bunch of millet seed not larger than a buck shot," and a rudimentary left diaphragm consisting of a "small band of muscular fibers about one-eighth inch in width along the border of the ribs." Posteriorly there was no diaphragm at all in this case, the left pleural cavity being filled with small and large bowel. The malrotated cecum and appendix lay at the apex against the clavicle.

Campanole and Rowland¹ reported five cases of hypoplasia of the lung associated with ipsilateral Bochdalek foramen hernia. At autopsy the weight

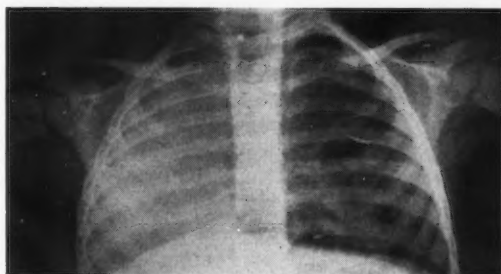


Figure 2.—Diaphragm normal two years after repair of the hernia.

of the lungs was 5.5 grams in two cases, and in the three others 2.5, 5 and 6 grams. In a case of ipsilateral Bochdalek foramen hernia and hypoplasia reported by Tolin,⁴ normal aeration of the hypoplastic lung eventually occurred.

These cases apparently represent a different condition than that reported by Hanson, in that the major bronchi were present and the lung tissue was capable of aeration. In Hanson's case, unlike the case herein reported, the hernia was on the same side as the agenesis. Also in the present case the diaphragmatic defect was not as large and a peritoneal sac was present, hence respiratory embarrassment was less severe. However, the paradoxical motion of the herniated abdominal contents through the anterior defect did cause considerable difficulty during anesthesia. Certainly the combination of anomalies in the present case would not have been compatible with prolonged life had not correction of the hernia been carried out.

Pathologically, Schneider³ has classified agenesis into: (1) True aplasia, (2) hypoplasia with rudi-

mentary bronchus and no lung tissue, and (3) hypoplasia with bronchus and lung tissue present. These types cannot be accurately differentiated clinically. The diagnosis of agenesis rests during life on examination by bronchoscopy, by bronchograms, by angiocardiograms, by thoracotomy or by a combination of these methods.

Usually the chest is asymmetrically flattened, with respiratory lag on the involved side. The mediastinal structures are pulled toward the involved side and signs of diminished aeration on the affected side are usually present.

By x-ray a radiopaque hemithorax is noted, except for the area of herniation of the lung across the midline, which is usually present. On the involved side the diaphragm is elevated, the intercostal spaces narrowed and the mediastinal structures are pulled toward that side.

The prognosis in pulmonary agenesis depends mainly on associated anomalies. The repeated episodes of respiratory tract disease in the early life in the present case, before growth of the left lung into the right chest had taken place, illustrate the added danger of infections in such patients, owing to reduced ventilatory reserve. Since usually in cases of diaphragmatic hernias of the foramen of Morgagni

there is a peritoneal sac, the transperitoneal approach is far superior to the thoracic approach for repair of the defect. This was particularly true in the present case, for it obviated pneumothorax on the side of the only lung.

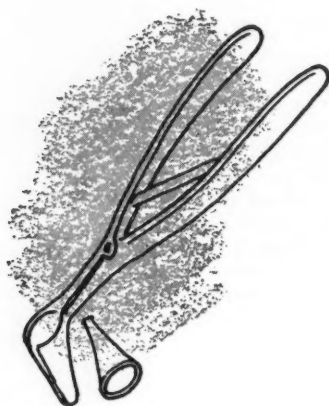
SUMMARY

A patient with congenital absence of the lung and contralateral diaphragmatic hernia—a combination of anomalies not previously reported—was treated successfully by repair of the hernia.

233 A Street, San Diego 1 (Chambers).

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California MEDICINE

For information on preparation of manuscript, see advertising page 2

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EDITORIAL

Malpractice Insurance Rates

PHYSICIANS throughout California and the nation have become painfully aware of the rapid increase in premium rates for their malpractice insurance in recent years. While there seems no additional increase in rates due in some parts of the state at this time, the trend has been upward and the ratio of coverage downward to the point where many physicians are wondering if an end is in sight.

The increased cost to the physician is, of course, eventually borne by the patient just as he bears the cost of rent, salaries and the other items making up the physician's overhead expense.

In the light of this experience, a news report carried in the San Francisco *Examiner* on January 13 takes on added significance. Headed "Auto Insurance Rates Going Up Again Tomorrow," the item reports that automobile insurance coverage will command higher rates as of right now—in some instances as much as 25 per cent more.

The story then relates the background for the rise in rates, pointing to higher costs of hospitalization and nursing, higher levels for settlements effected out of court and sky-high judgments handed down by juries in personal injury cases.

A student of malpractice insurance in recent years could easily substitute the words "medical malpractice" for the word "automobile" in this news story and gain an accurate appraisal of the insurance trend in this field.

Both automobile insurance and medical malpractice insurance cover personal injuries. Both encounter hospitalization and allied expenses. Both are vulnerable to high judgments which require the prudent policyholder to invest in large amounts of coverage. The analogy between the two is obvious.

The automobile insurance story in the *Examiner* states that "insurance men contend . . . the steady

climb in personal injury awards . . . [is] based more on emotions than on facts." This statement could be applied with equal validity to malpractice awards, as any losing physician or his legal representatives could readily testify. Juries are subject to the pulling out of all the emotional stops.

Pointing out that automobile injury claims cost some \$200 million yearly, the report notes that "the cost is passed along to insurance buyers and goes steadily upward." While a physician cannot pass his malpractice insurance cost along to his patients directly, he certainly must do so indirectly as a part of his fees. Certain it is that he cannot absorb such mounting costs without some form of reimbursement.

Settlements of automobile injury claims in 1940 averaged \$400, the newspaper story says; in 1955 the average was \$8,500. On top of that, "jury verdicts that run into hundreds of thousands of dollars frighten insurance men, who fear that each such verdict can bring on a rash of similar ones." The story points out that such a rash has not yet developed but is a continuing potential threat.

Medicine has not been so fortunate. The rash has developed, here and in other areas. The evil day has arrived for medical malpractice, and the insurance men doubtless sense the impending extension of this public philosophy into the much broader field of automobile coverage.

Interestingly enough, the blame for automobile accidents can generally be established with a high degree of accuracy, while the same cannot be said in medical malpractice cases. Here the physician is required to maintain certain minimum standards of skill and proficiency; on top of that he is often held accountable by judges and juries for unsatisfactory results of treatment which may have no bearing whatsoever on his proficiency. Even where nature, not man, is accountable for a bad result, physicians have frequently been held to account by the courts.

As a part of the automobile insurance story, the *Examiner* refers to the National Association of Claimants' Compensation Attorneys, a nationwide organization of lawyers who specialize in claims for damages. This group has become well organized, not only as a so-called trade group but also as instructors in the art and technique of courtroom tactics designed to influence judgments for plaintiffs. The newspaper refers to these as "intense courtroom techniques."

While many of the facts related in this report are not new, it is interesting that to date there seems to have been little if any resource to inhibit them. Several years ago a group of insurance companies initiated a public education campaign to let prospective jurors know that high judgments handed down by them must eventually come out of their own pockets in the form of higher insurance costs. Immediately the plaintiffs' attorneys raised a hue and cry, claiming that such advertising was an improper representation to citizens then serving on juries. While the insurance carriers successfully weathered that storm, the public education program was discontinued and it is doubtful that its lessons were well learned or long remembered.

An even stronger claim could be made with regard to unwarranted medical malpractice cases. Here the cost to the public may be expected to be of two kinds—one measurable in money, the other in the quality of medical care. Costs will increase because of the added procedures, such as x-rays and laboratory

tests, which the medical practitioner will require as his sole means of making his records courtroom-proof. And the standards of medical practice may be affected in this way: Some physicians might be expected to eschew certain procedures or techniques which are beneficial to 95 per cent or more of the people but which, for an unpredictable minority, present to the physician the potentiality of a lawsuit. Medical advances, which have been so rapid in recent years, may have to undergo a period of stagnation while courtroom hazards intimidate the physician who is, by training and experience, qualified to use them for the benefit of his patients. During such a period, the practice of medicine may well be governed by those "laymen" who sit behind the judicial bench or the jury box railing.

Under today's conditions, physicians face increasing insurance rates and increasingly strict legal interpretations of their activities. They retain the right to be represented by counsel and it is natural to assume that legal minds will explore the situation even more thoroughly than has been done in the past.

For the sake of all concerned, so long as illness and the treatment of illness is with us, it is hoped that a more satisfactory solution may be reached, one which will establish both physicians and patients in their rightful spheres and eliminate what is probably an expression of the economic transition of the times.

Contribution to World Peace

TO MAKE THE universal language of medicine a more cogent factor in the cause of international peace and human progress, physicians of the free world are united in the World Medical Association, whose membership now embraces 53 national medical associations. With medicine as a solvent of the barriers of race, color, creed and nationality and with the World Medical Association at hand to make use of the better understanding that comes with the better interchange of ideas, every American physician now has the opportunity to help make our profession a stronger influence for world peace. This he may do by joining our own United States Committee of the World Medical Association.

One of the constitutional purposes of the W.M.A. is to promote world peace. Toward this end at its

tenth general assembly in Havana last October, the organization adopted a six-point program: The development of mutual exchange visits of foreign physicians; exchanges of distinguished medical teachers; establishment by each W.M.A. member national association of an "international visitors' bureau"; stimulation of visits by representatives of member associations to the annual meetings of other member associations; holiday exchange programs between physicians and their families; and exchange of textbooks and medical and scientific publications.

You may play your part in this laudable program by joining the U. S. Committee of the W.M.A. Active membership dues for 1957 are \$10. To join the U. S. Committee—and to learn how you can contribute to this great cause—communicate with Louis H. Bauer, M.D., World Medical Association, 10 Columbus Circle, New York 19, N. Y.

California MEDICAL ASSOCIATION

NOTICES & REPORTS

Executive Committee Minutes

Tentative Draft: Minutes of the 261st Meeting of the Executive Committee, San Francisco, December 6, 1956.

The meeting was called to order by Chairman Heron in the Walnut Room of the Sir Francis Drake Hotel, San Francisco, on Thursday, December 6, 1956, at 2:00 p.m.

Roll Call:

Present were President-Elect MacDonald, Council Chairman Lum, Speaker Doyle and Auditing Committee Chairman Heron, and ex-officio, Editor Wilbur and Secretary Daniels.

Absent for cause, President Charnock.

A quorum present and acting.

Present by invitation were Messrs. Hunton, Thomas and Gillette of C.M.A. staff, legal counsel Hassard, Messrs. Ben H. Read and Eugene Salisbury of the Public Health League of California.

Present during a portion of the meeting were Mr. J. E. Smits, legislative chairman, Messrs. Avery Millard, James E. Ludlum, Robert J. Thomas, Joseph L. Zem, Max E. Gerfen, George U. Wood, Msgr. T. J. O'Dwyer and Doctor W. W. Stadel, representing the California Hospital Association; Misses Ruth Jorgenson and Christine McKenzie of the California League for Nursing; and Mr. E. E. Cosand, representing the Junior College Association.

1. Membership:

(a) On motion duly made and seconded in each instance, three applicants were voted Retired Membership. These were: Thomas Floyd Bell of Alameda-Contra Costa; Madeline M. Manuel of Los Angeles; and Alson R. Kilgore of San Francisco.

(b) On motion duly made and seconded, seven applicants were voted Associate Membership. These were: Robert G. Richards, Dirk M. teGroen, Los Angeles; E. David Akers, Sacramento; Mary F. Ni, San Joaquin County; James M. Bodie, San Ma-

teo County; Lloyd S. Bambauer, Shin Hsin Gin, Tulare County.

(c) On motion duly made and seconded, reductions in dues were voted one applicant.

2. Financial:

Discussion was held on the mileage allowance for those officers, Councilors, committee members and others who use their own cars on Association business. On motion duly made and seconded, it was voted to recommend to the Council that the allowance be set at 10c a mile.

3. Nurse Education:

Misses Jorgenson and McKenzie, representing the California League for Nursing, and Mr. Cosand, representing the Junior College Association, discussed a proposal that nurses be trained in the junior colleges for a period of less than 36 months, as now required by law. They estimated a 24-month course and pointed out that the Pasadena Junior College has already graduated 18 nurses from such a course and that junior colleges in Bakersfield and Contra Costa County may institute similar courses. Nationally, such courses have been given since 1950, there are some 200 graduates of such courses, and 300 students are now enrolled.

This proposal would take the form of legislation to amend the Nurse Practice Act, to permit the

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Board of Nurse Examiners to have authority to lower the present 36-month training minimum for registered nurses.

On motion duly made and seconded, it was voted to look upon this proposal as an interesting experiment but to withhold support from the proposed legislation at this time in view of the limited experience demonstrated in the proposed training program.

4. Foreign Medical School Graduates:

Mr. J. E. Smits, legislative chairman of the California Hospital Association, and others discussed proposed legislation which would permit foreign physicians to undertake internships in California without the initial written examination now required.

On motion duly made and seconded, it was voted to report this proposal to the Council and to ask the Board of Medical Examiners to participate in the deliberations.

5. Health Insurance:

Discussion was held on a request from a health insurance consultant to appear before the Council or

Executive Committee in support of a request that indemnities in commercial insurance contracts be considered as full payment for services rendered. On motion duly made and seconded, it was voted to invite this consultant, together with labor and management trustees of health and welfare trust funds, to appear before a meeting of the Executive Committee and the members of the Executive Committee of the Commission on Medical Services.

6. Polio Vaccine:

Doctor Lum read a letter from Doctor Hartzell Ray in which he suggested the Association support a statewide drive to insure the vaccination with Salk vaccine of all Californians under age 40. Since the Council had previously approved such action, the executive secretary was instructed to advise Doctor Ray accordingly.

Adjournment:

There being no further business to come before it, the meeting was adjourned at 5:40 p.m.

IVAN C. HERON, M.D., *Chairman*

ALBERT C. DANIELS, M.D., *Secretary*

CALIFORNIA MEDICAL ASSOCIATION

Eighty-sixth Annual Session

April 28 - May 1, 1957

AMBASSADOR HOTEL • LOS ANGELES

In Memoriam

BERAUER, JOSEPH M. Died December 21, 1956, aged 89. Graduate of the Medical College of Ohio, Cincinnati, 1893. Licensed in California in 1923. Doctor Berauer was a retired member of the Los Angeles County Medical Association and the California Medical Association, and an associate member of the American Medical Association.



BROWN, ELVIN O. Died in Sacramento, December 30, 1956, aged 73. Graduate of the Chicago College of Medicine and Surgery, Illinois, 1909. Licensed in California in 1922. Doctor Brown was a member of the Sacramento Society for Medical Improvement.



DAHLEEN, HENRY E. Died in San Jose, December 17, 1956, aged 74, of heart disease. Graduate of the University of Minnesota Medical School, Minneapolis, 1908. Licensed in California in 1920. Doctor Dahleen was a member of the Santa Clara County Medical Society.



DOOLEY, JOHN B. Died March 26, 1956, aged 83. Graduate of the University of Arkansas School of Medicine, Little Rock, 1908. Licensed in California in 1925. Doctor Dooley was a retired member of the Los Angeles County Medical Association and the California Medical Association, and an associate member of the American Medical Association.



FRASER, ROBERT C. Died in Hollywood, December 13, 1956, aged 72. Graduate of Wayne University College of Medicine, Detroit, Michigan, 1905. Licensed in California in 1929. Doctor Fraser was a member of the Los Angeles County Medical Association.



GERRARD, CLARENCE CHARLES. Died in Bakersfield, December 11, 1956, aged 68, of heart disease. Graduate of the University of Vermont College of Medicine, Burlington, 1913. Licensed in California in 1930. Doctor Gerrard was a member of the Kern County Medical Society.



GLENN, SAMUEL G. Died in Oxnard, December 4, 1956, aged 37. Graduate of the University of Illinois College of Medicine, Chicago, 1948. Licensed in California in 1949. Doctor Glenn was a member of the Los Angeles County Medical Association.



GOLDEN, JOHN HENRY. Died in Boise, Idaho, December 18, 1956, aged 50, of heart disease. Graduate of Georgetown University School of Medicine, Washington, D. C., 1930. Licensed in California in 1930. Doctor Golden was a member of the San Francisco Medical Society.



HAMILTON, LUKE N. Died in Oakland, December 13, 1956, aged 53, of congestive heart failure. Graduate of Stanford University School of Medicine, Stanford-San Francisco, 1930. Licensed in California in 1930. Doctor Hamilton was a member of the Alameda-Contra Costa Medical Association.

JOSEPHI, MARION GERTRUDE. Died in Walnut Creek, December 5, 1956, aged 55, of generalized carcinoma metastatic from carcinoma of the breast. Graduate of Cornell University Medical College, New York, N. Y., 1926. Licensed in California in 1949. Doctor Josephi was a member of the Alameda-Contra Costa Medical Association.



LOVEALL, GEORGE R. Died in San Diego, December 12, 1956, aged 41, of leukemia. Graduate of Northwestern University Medical School, Chicago, Illinois, 1943. Licensed in California in 1944. Doctor Loveall was a member of the San Diego County Medical Society.



MAGG, DAVIN. Died in Santa Ana, November 30, 1956, aged 47, of heart disease. Graduate of Medizinische Fakultät der Universität, Wien, Austria, 1936. Licensed in California in 1939. Doctor Magg was a member of the Orange County Medical Association.



MYERS, LLOYD. Died in San Diego, December 12, 1956, aged 65. Graduate of the University of Nebraska College of Medicine, Omaha, 1918. Licensed in California in 1931. Doctor Myers was a member of the San Diego County Medical Society.



MULLEN, EUGENE W. Died in San Jose, December 31, 1956, aged 79. Graduate of the University of Michigan Medical School, Ann Arbor. Licensed in California in 1911. Doctor Mullen was a retired member of the Santa Clara County Medical Society and the California Medical Association, and an associate member of the American Medical Association.



PALLESEN, VIGGO WALDEMAR. Died December 31, 1956, aged 68, of a stroke. Graduate of the College of Medical Evangelists, Loma Linda-Los Angeles, 1929. Licensed in California in 1931. Doctor Pallesen was a member of the San Joaquin County Medical Society.



PETERSEN, RALPH C. Died in Los Angeles, December 25, 1956, aged 49. Graduate of Washington University School of Medicine, St. Louis, Missouri, 1937. Licensed in California in 1945. Doctor Petersen was a member of the Los Angeles County Medical Association.



TAYLOR, MARY CAROLYN. Died February 20, 1956, aged 90. Graduate of Cooper Medical College, San Francisco, 1905. Licensed in California in 1905. Doctor Taylor was a retired member of the San Joaquin County Medical Society and the California Medical Association, and an associate member of the American Medical Association.



TICE, ELDON W. Died in Los Angeles, January 3, 1957, aged 73. Graduate of the College of Physicians and Surgeons, Los Angeles, 1918. Licensed in California in 1918. Doctor Tice was a member of the Los Angeles County Medical Association.

POSTGRADUATE INSTITUTE

WEST COAST COUNTIES

Presented by Postgraduate Activities Committee of the California Medical Association, in cooperation with University of Southern California School of Medicine, Los Angeles, Phil R. Manning, M.D., Director of Postgraduate Division.

Golden Bough Theater and La Playa Hotel

CARMEL . . . MARCH 7 and 8, 1957

PROGRAM

Thursday Morning, March 7

INTERNAL MEDICINE

- 9:00-10:45—Lectures, Golden Bough Theater—
The Differential Diagnosis of Jaundice. Thomas H. Brem, M.D.
Electrolyte Problems. Telfer B. Reynolds, M.D.
Treatment of Diabetes. Helen E. Martin, M.D.
Nephrosis and Nephritis. Ralph E. Homann, Jr., M.D.
- 11:00-12:00—Three Concurrent Panel Discussions—La Playa Hotel (Three faculty members each; you may go to one of your choice.)
Acute Pancreatitis.
Recent Advances in Treatment in Internal Medicine.
Cardiac Patient in Pregnancy.
- 12:15-1:45—Lunch.
The Role of the California Medical Association in Postgraduate Medical Education. Edward C. Rose-now, Jr., M.D.

Thursday Afternoon, March 7

OBSTETRICS AND GYNECOLOGY

- 2:00-3:40—Lectures, Golden Bough Theater—
Office Gynecology. George A. Macer, M.D.
Pelvic Pain. Charles F. Langmade, M.D.
Dystocia. Bernard J. Hanley, M.D.
Obstetrical Anesthesia. Judson S. Denson, M.D.
- 4:00-5:00—Three Concurrent Panel Discussions, La Playa Hotel. (Three faculty members each; you may go to one of your choice.)
Low Back Pain.
Acute Abdomen in Pregnancy.
The Diabetic in Pregnancy.
- 8:00—JOINT DINNER MEETING with Monterey County Medical Society at La Playa Hotel. Wives are invited to attend.
Cardiology of Yesterday, Today and Tomorrow. George C. Griffith, M.D.

Friday Morning, March 8

SURGERY

- 9:00-10:45—Lectures, Golden Bough Theater—
Vascular Surgery. Herbert J. Movius, II, M.D.
Diagnosis of Acute Abdomen. E. M. Greaney, M.D.
Treatment of Burns. Irving A. Meeker, Jr., M.D.
Management of Upper G.I. Bleeding. E. M. Greaney, M.D.
- 11:00-12:00—Three Concurrent Panel Discussions, La Playa Hotel. (Three faculty members each; you may go to one of your choice.)
Diagnosis of the Acute Abdomen in Childhood.
Electrolyte Problems in Surgical Patients.
Immediate Management of Traumatic Conditions.
- 12:15-1:45—Lunch.
Goals in Postgraduate Medical Education. Phil R. Manning, M.D.

Friday Afternoon, March 8

- 2:00-3:45—Lectures, Golden Bough Theater—
Orthopedic Problems in General Practice. Lorin L. Stephens, M.D.
Newborn Emergencies. Merl J. Carson, M.D.
Anesthesia in Pediatrics. Judson S. Denson, M.D.
- 4:00-5:00—Three Concurrent Panel Discussions, La Playa Hotel—
Management of Bacterial Infections.
Metabolic Bone Diseases.
Treatment of Anemias.

Each panel discussion will be led by three faculty members and one physician from the community. You may go to one of your choice.

HOSTS: Monterey County Medical Society . . . **REGIONAL CHAIRMAN:** Edwin W. Tucker, M.D., 1073 Cass Street, Monterey . . . **FEE:** \$15.00. For additional information, contact Postgraduate Activities office, California Medical Association, 417 South Hill Street, Los Angeles 13. Special room rate at La Playa Hotel: \$8.00, single; \$10.00, double. Make hotel reservations early directly with hotel.

All California Medical Association Members are cordially invited to attend. Special activities are planned for wives during entire two days by Woman's Auxiliary, Monterey County Medical Society.

APPLICATION FOR HOUSING ACCOMMODATIONS

FOR YOUR CONVENIENCE in making hotel reservations for the coming meeting of the **California Medical Association**, April 28-May 1, 1957, Los Angeles, hotels and their rates are at the right. Use the form at the bottom of this page, indicating your first and second choice. Because of the limited number of single rooms available, you will stand a much better chance of securing accommodations of your choice if your request calls for rooms to be occupied by two or more persons. **All requests for reservations must give definite date and hour of arrival as well as definite date and approximate hour of departure; also names and addresses of all occupants of hotel rooms must be included.**

**ALL RESERVATIONS MUST BE
RECEIVED BEFORE: APRIL 1, 1957**

Eighty-sixth Annual Session CALIFORNIA MEDICAL ASSOCIATION Los Angeles, California APRIL 28—MAY 1, 1957

HOTEL ROOM RATES*

	Single	Double	Twin Beds	Suites
AMBASSADOR HOTEL				
3400 Wilshire Boulevard				
Main Building.....	9.00-17.00		12.00-20.00	28.00-36.00
Garden Studios.....	15.00-21.00		22.00-26.00	38.00-48.00
CHAPMAN PARK HOTEL				
3405 Wilshire Boulevard.....			12.00	20.00-25.00
THE GAYLORD HOTEL				
3355 Wilshire Boulevard.....	7.00-9.00	10.50	11.50-12.50	18.00
HOTEL CHANCELLOR				
3191 West Seventh Street.....	6.00-8.00	9.00-10.00	10.00-12.00	17.00-22.00
SHERATON-TOWN HOUSE				
2961 Wilshire Boulevard.....	11.00-16.00		16.00-23.00	31.00

*The above quoted rates are existing rates but are subject to any change which may be made in the future.

CALIFORNIA MEDICAL ASSOCIATION
450 Sutter Street—Room 2000
San Francisco 8, California

Please reserve the following accommodations for the 86th Annual Session of the California Medical Association, in Los Angeles April 28 - May 1, 1957.

Single Room \$..... Double Bedded Room \$..... Twin Bedded Room \$.....
Small Suite \$..... Large Suite \$..... Other Type of Room \$.....
First Choice Hotel..... Second Choice Hotel.....

ARRIVING AT HOTEL (date)..... Hour:..... A.M. P.M. {Hotel reservations will be held until
Leaving (date)..... Hour:..... A.M. P.M. {6:00 P.M., unless otherwise notified

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of both persons for each double room or twin bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

.....
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.....

Individual Requesting Reservations—Please print or type

Name.....
Address.....

Delegate?..... Alternate?.....

County.....
City and State.....



WOMAN'S AUXILIARY

TO THE CALIFORNIA MEDICAL ASSOCIATION

A Public Relations Letter To All California Physicians

DEAR DOCTOR:

You probably will be reading this at your office. No doubt there are many things to be done—charts to write, files to be completed—and maybe you had hoped for a few minutes to tidy up your desk, or even to read other articles in this journal. But please . . . for right now . . . won't you just lean back and treat yourself to a few minutes of relaxation as you read this page? (You may even rest your feet on the desk—while I hope that the phone doesn't ring until you finish!)

Of course you have already guessed that I want to tell you a little about the public relations activities of your state auxiliary. And before we go any further, I do trust that your wife is a member! If she isn't, won't you please encourage her to join her county auxiliary? She will find it very rewarding, for the aims of the auxiliary are very much the same as those of your C.M.A. She will meet women whom she will grow to know and to love. Many of these women will become cherished friends—certainly one of the finest compensations of auxiliary membership. Your wife will learn of issues affecting medicine, and in turn perhaps she can inform you, for the auxiliary works very closely with the A.M.A. and the C.M.A. as well as with the component county medical associations.

Public relations is really a very broad field. It isn't something which can be accomplished in a single program or project, but it's "everything we do—or fail to do—our every act, and word and attitude—which creates an impression, good or bad, on the public." It's the way we live our own personal lives and the manner in which we conduct our auxiliary activities. Good public relations is not something which can be accomplished entirely by just one person or even by one committee—it takes all of us working together to be most effective. And that's just another reason why we need every doctor's wife as an auxiliary member.

To acquaint the public with the aims of the Medical Association and its auxiliaries some specific projects are planned each year in all our counties. It may be an auxiliary booth at the county or state fair which helps persons without medical background to better understand the medical profession; or it may be active participation in civil defense or community health. All such activities are, of course, with the approval of the Medical Association. Many county auxiliaries hold a combined meeting with the wives of lawyers and dentists. This may be announced

as "Auxiliary Guest Day" or "Community Leadership Luncheon."

Individually an auxiliary member promotes good public relations when she thinks to send gift subscriptions for *Today's Health* to her nonmedical friends; when she contributes service hours to civil defense or to some of the voluntary health programs within her community.

The American Medical Education Foundation, the Physicians' Benevolence Fund and Nurse Recruitment are all major auxiliary projects. The element of self help has a definite appeal within our own group and with the public as well. By planning fund-raising activities for these worthwhile projects the auxiliary has been given some excellent press coverage throughout the entire state.

The Christmas season is a perfect time of year for the auxiliary to help the less fortunate people in its community. Literally hundreds of gifts are taken to hospitals, rest homes and orphanages. Phonograph records, hair dryers, cosmetics, subscriptions to newspapers, magazines, toys and dolls are just some of the gifts which cheered many a heart last Christmas day.

You may be interested to know that the C.M.A.'s new public relations *Newsletter* is being sent to every member in our state auxiliary—almost 7000 women. We think it is very informative and we are pleased to have been placed on your mailing list.

In speaking before a group of physicians' wives, Mr. James E. Bryan, author of *Public Relations in Medical Practice*, said: "The wife of a physician can play her most important role helping to build a bridge of understanding between the doctor and the nonmedical community. Although she is a doctor's wife, she is also a part of the nonmedical world about him." Mr. Bryan suggested that the wife of a doctor can do much for medical public relations if she takes a leading part in the community. The very fact that a devoted worker is a doctor's wife will reflect credit on the entire medical profession.

Well, these are some of the public relations activities I wanted to tell you about—nothing too spectacular really. However, we always keep in mind that we are an auxiliary to the California Medical Association and that our activities must always reflect credit upon the medical profession. This motto we keep before us, "We teach a little by what we say. We teach more by what we do. But, we teach most by what we are."

Sincerely,
MRS. FLOYD K. ANDERSON,
Public Relations Chairman

NEWS & NOTES

NATIONAL • STATE • COUNTY

ALAMEDA

The Sixth Annual **Clifford D. Sweet Seminar** will be held on June 7 and 8, 1957, at the Children's Hospital of the East Bay in Oakland.

The guest speaker is **Sydney S. Gellis, M.D.**, professor of pediatrics, Boston University School of Medicine, Boston.

LOS ANGELES

Dr. George V. Webster of Pasadena was elected president-elect of the American Society for Surgery of the Hand at the annual meeting of the society held in Chicago late last month. **Dr. J. Edward Flynn** of Boston was installed as president, succeeding **Dr. Lot D. Howard, Jr.**, of San Francisco, who was elected to the council of the society.

* * *

The 24th annual meeting of the **Western Branch, American Public Health Association**, will be held May 29 to June 1 at the Lafayette Hotel in Long Beach. Special sessions will be held covering epidemiology, public health education, sanitation, laboratory, nutrition and industrial hygiene.

SAN FRANCISCO

A one-day **Medical Symposium on Cerebral Palsy** will be conducted in San Francisco March 2 by the Medical Advisory Board of the United Cerebral Palsy Association of San Francisco in cooperation with the University of California School of Medicine and Medical Extension and Stanford University School of Medicine.

The program will be held at the University of California Medical Center, 2nd and Parnassus Avenues.

Guest speaker will be **Samuel P. Hicks, M.D.**, assistant professor of pathology Harvard Medical School, and pathologist for the New England Deaconess Hospital, Boston. **Dr. Hicks'** topic will be "Mechanisms of Malformation."

Further information about the program may be obtained by writing **Seymour M. Farber, M.D.**, Head, Medical Extension, University of California Medical Center, San Francisco 22.

* * *

Dr. L. Henry Garland, San Francisco, was elected president of the California Academy of Medicine at the recent annual meeting of the organization. He succeeds **Dr. Clayton D. Mote**.

Dr. Matthew E. Hazeltine was named president-elect, and **Dr. Hilliard J. Katz** was reelected secretary-treasurer.

SAN JOAQUIN

Dr. James J. Heffernan was elected president of the San Joaquin County Medical Society at the annual meeting in January. **Dr. Heffernan** succeeds **Dr. Louis Armanino**. **Dr. Gilbert den Dulk, Ripon**, was named president-elect and **Dr. F. A. McGuire** was reelected secretary-treasurer.

Named as delegates to the California Medical Association were **Drs. Armanino, John F. Mayo of Lodi, James Benn of Ripon, and Paul R. Noetling of Angels Camp.**

SAN MATEO

Dr. Henry A. Brown, Burlingame, was installed as president of the San Mateo County Medical Society at the annual meeting held in December. He succeeded **Dr. Norman C. Fox** of San Bruno. **Dr. Ferrall H. Moore**, Redwood City, was elected president-elect. Elected as the society's representative in the House of Delegates of the California Medical Association were **Drs. Brown and Moore** and **Drs. Bradley C. Brownson, Harry F. Smith, Hartzell H. Ray, Alan M. Hedden, Logan Gray, James F. Sawtelle and Daniel Boudett.**

SHASTA

Dr. John E. Wolf, assistant medical director at Shasta County Hospital, has been appointed temporary health officer for the county to take the place of **Dr. Rachel Sandrock**, who resigned last summer and then continued to serve while a replacement for her was being sought. **Dr. Wolf** will serve in the position on a part-time basis while continuing at his post at the hospital.

GENERAL

Dr. Wilton L. Halverson, former California State Director of Public Health (1943-1954) and professor emeritus, University of California, was named recipient of the **Arthur T. McCormack** award by the Association of State and Territorial Health Officers at the annual meeting of the Association in Atlantic City last November. The honor was in recognition of **Dr. Halverson's** "distinguished service in the fields of local, state and international health."

* * *

The Fifth Annual Interim Scientific Meeting, **Phi Lambda Kappa Fraternity**, will be held at Desert Inn, Las Vegas, Nevada, March 19 to 26. The five day scientific program will be for the benefit of the general practitioner and will feature papers and symposiums by specialists in their fields. For registration and information, write **Dr. Samuel L. Lemel**, national secretary, Phi Lambda Kappa, 1030 Euclid Avenue, Cleveland 15, Ohio.

* * *

A three-day conference on **Practical Management of Poliomyelitis** will be presented in San Francisco and San Leandro February 27 through March 1 by the University of California School of Medicine and Medical Extension in cooperation with the Fairmont Hospital Poliomyelitis and Rehabilitation Center in San Leandro.

Enrollment is open to graduates of approved medical schools, nurses, physical therapists, occupational therapists and social workers actively engaged in poliomyelitis therapy. The fee is \$50.

Discussions will be devoted to early diagnosis and therapeutic measures, nursing care principles, and the psychiatric impact on the patient and family, supplemented by demonstrations of physical therapy techniques and orthopedic devices.

On February 27 and 28 the conference will meet at the University of California Medical Center, San Francisco. The March 1 session will be conducted at the Fairmont Hospital, San Leandro.

POSTGRADUATE EDUCATION NOTICES

THIS BULLETIN of the dates of postgraduate education programs and the meetings of various medical organizations in California is supplied by the Committee on Postgraduate Activities of the California Medical Association. In order that they may be listed here, please send communications relating to your future medical or surgical programs to: Mrs. Margaret H. Griffith, Director, Postgraduate Activities, California Medical Association, 417 South Hill Street, Los Angeles 13.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

Fractures. Tuesdays, February 19 through March 26, 1957. Twelve hours. Fee: \$30.00.

Sterility. Guest speakers: I. C. Rubin, M.D., New York, and M. B. Davis, M.D., Chicago. March 8 and 9. Thirteen hours lectures, three hours clinic.

The Pharmacological Basis of Therapeutics. Wednesdays, March 13 through May 8. Eighteen hours. Fee: \$50.00.

Preventive Psychiatry in Pediatric Practice. Thursdays, March 21 through June 6. Twenty-four hours. Fee: \$50.00.

Diagnosis and Management of Benign and Malignant Lesions of the Head and Neck. Wednesday, March 27. Six and one-half hours. Fee: \$17.50.

Abdominal Pain. Wednesday, April 3. Six hours. Fee: \$17.50.

Minor Surgery. Saturday, April 6. Six hours. Fee \$17.50.

Inhalation Therapy. Wednesday, April 24. Six hours. Fee: \$17.50.

Dissection of Extremities. Mondays, April 29 through June 10. Seventeen hours.*

Contact: Thomas H. Sternberg, M.D., Assistant Dean for Postgraduate Medical Education, U.C.L.A., Los Angeles 24. BRadshaw 2-8911, Ext. 202.

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Seminars in Medical Technology. Tuesday evenings, February 19 through April 2. Fee: \$15.00.

Practical Management of Poliomyelitis. February 27, 28, and March 1.*

Ophthalmological Conference on Glaucoma. February 28 and March 1. Fee: \$50.00.

Symposium on Cerebral Palsy. Seven hours. March 2. Fee: \$5.00.

Course for General Practitioners. Monday through Friday, March 4 to 8, Mount Zion Hospital. Thirty hours. Fee: \$70.00.

Current Cardiac Concepts and Practice. Mornings, April 1 to 5. Fifteen hours. Fee: \$45.00.

Electrocardiography in Daily Practice. Afternoons, April 1 to 5. Twenty hours. Fee: \$45.00.

Clinical Advances in Diagnosis and Treatment of Metabolic and Endocrine Diseases. March 28 to 30. Fee: \$50.00.

*Fees to be announced.

Fundamental Principles of Radioactivity and the Diagnostic and Therapeutic Uses of Radioisotopes. Two or three month course limited to one enrollee per month. Tuition: \$250.00 per month.

Contact: Seymour M. Farber, M.D., Head, Postgraduate Instruction, Office of Medical Extension, University of California Medical Center, San Francisco 22. MOntrorse 4-3600, Ext. 665.

STANFORD UNIVERSITY SCHOOL OF MEDICINE

Morning Clinical Conferences, each Monday, Room 515. **Contact:** D. H. Pischel, M.D., Professor, Division of Ophthalmology, Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15.

Postgraduate Conference in Ophthalmology. March 18 to 22.

Contact: Lowell Rantz, M.D., Director, Postgraduate Programs, Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15. WEst 1-8000, Extension 207.

UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES

Home Course in Electrocardiography. Physicians may register at any time and receive all 52 issues. Fifty-two weeks. Fee: \$100.00.

Cardiac Resuscitation. Sponsored by the Los Angeles County Heart Association each Wednesday throughout the year, 4 to 6 p.m. Residents admitted without fee. Tuition for all other physicians: \$30.00. (Each session all-inclusive.)

Conferences and Live Clinics in Diseases of the Liver and Biliary Tract. All day, each day, Friday, Saturday and Sunday, March 22, 23, and 24, 1957. Hotel Statler and Los Angeles County Hospital. Fee: \$65.00.

Contact: Phil R. Manning, M.D., Director, Postgraduate Division, University of Southern California School of Medicine, 2025 Zonal Avenue, Los Angeles 33. CApital 5-1511.

COLLEGE OF MEDICAL EVANGELISTS

Operative Surgery. Wednesdays, March 20 through June 5, 1957. Thirty hours.

Gynecology. Wednesdays, March 27 through May 29, 1957. Ten hours.

Thoracic Surgery. Wednesdays, April 24 through May 15, 1957. Eight hours.

Contact: Chairman, Section on Graduate and Postgraduate Medicine, College of Medical Evangelists, 1720 Brooklyn Ave., Los Angeles 33. ANgelus 9-9131, Ext. 205.

CALIFORNIA MEDICAL ASSOCIATION POSTGRADUATE COURSES

AUDIO DIGEST FOUNDATION, a nonprofit subsidiary of the C.M.A., now offers (on a subscription basis) a series of hour-long tape recordings designed to keep the physician abreast of current happenings in his particular field. Composed of practice-useful abstracts from 600 leading journals, with short lectures and editorial comments from prominent physicians, Audio Digest offers programs covering general practice, surgery, internal medicine, obstetrics and gynecology, and pediatrics.

Contact: Claron L. Oakley, editor, 6767 Sunset Blvd., Hollywood 28, Calif.

SACRAMENTO VALLEY CIRCUIT COURSES for Dunsmuir, Chico, Marysville and Auburn, in cooperation with Stanford University School of Medicine. Spring series begins week of March 4.

NORTH COAST CIRCUIT COURSES for Eureka, Ukiah and Napa, in cooperation with University of California, San Francisco. Spring series begins week of March 4.

WEST COAST CIRCUIT in cooperation with University of Southern California School of Medicine:

San Luis Obispo—Mondays, February 18, 25, March 4, 11, 1957.

Santa Maria—Tuesdays, February 19, 26, March 5, 12, 1957.

Santa Barbara—Wednesdays, February 20, 27, March 6, 13, 1957.

POSTGRADUATE INSTITUTES, 1957

WEST COAST COUNTIES in cooperation with University of Southern California, March 7 to 8, 1957, Golden Bough Theater and La Playa Hotel, Carmel. Chairman: Edwin W. Tucker, M.D., 1073 Cass Street, Monterey.

SAN JOAQUIN COUNTIES in cooperation with University of California, San Francisco, March 21 to 22, Hotel Californian, Fresno. Chairman: Richard H. Whitten, M.D., 2912 Fresno Street, Fresno.

NORTH COAST COUNTIES in cooperation with Stanford University, April 11 to 12, 1957, Santa Rosa, place to be announced. Chairman: Robert S. Quinn, M.D., 185 Sotoyome Avenue, Santa Rosa.

SACRAMENTO VALLEY COUNTIES in cooperation with College of Medical Evangelists, June 19 to 21, 1957, Tahoe Tavern, Lake Tahoe. Chairman: C. M. Blumenfeld, M.D., 4700 Parkridge Road, Sacramento.

Contact: One of the chairmen listed above, or Mrs. Margaret H. Griffith, Director, Postgraduate Activities, California Medical Association, 417 So. Hill Street, Los Angeles 13. Madison 6-0683.

Medical Dates Bulletin

FEBRUARY MEETINGS

COLORADO STATE MEDICAL SOCIETY Mid-Winter Clinical Session, Shirley-Savoy Hotel, Denver, February 19 to 22. Contact: Harvey T. Sethman, executive secretary, 835 Republic Building, Denver 2, Colorado.

Ninth Annual Mid-Winter Radiological Conference sponsored by LOS ANGELES RADIOLOGICAL SOCIETY. Biltmore Hotel, Los Angeles, February 22 and 23. Contact: Louis J. Bonann, M.D., 1245 Glendon Avenue, Los Angeles 24 for dinner reservations; or Nathan M. Spishakoff, M.D., 405 North Bedford Drive, Beverly Hills.

STATE BOARD OF MEDICAL EXAMINERS Oral Examination, Los Angeles, February 23.*

STATE BOARD OF MEDICAL EXAMINERS Written Examination, Los Angeles, February 25 to 28.

*NOTE: In regard to the dates of oral examinations, applicants are requested NOT to arrange to come to an oral examination until they receive a notice of the action of the Credentials Committee advising them of the time and place to appear.

AMERICAN COLLEGE OF CHEST PHYSICIANS Postgraduate Course on Diseases of the Chest. February 25 through March 1, 9 a.m.-5 p.m., Mark Hopkins Hotel, San Francisco. Contact: Mr. Murray Kornfeld, executive director, 112 East Chestnut Street, Chicago 11.

MARCH MEETINGS

MEDICAL ADVISORY BOARD, UNITED CEREBRAL PALSY ASSOCIATION all day Symposium on Cerebral Palsy, San Francisco, March 2. Guest speaker: Dr. Samuel P. Hicks, Pathologist, Harvard Medical School. Contact: Mrs. Marjorie E. Brush, executive director, 47 Kearny St., San Francisco 8 or phone EXbrook 2-1862.

SOCIETY OF GRADUATE SURGEONS OF LOS ANGELES COUNTY HOSPITAL Surgical Forum, March 4 to 8, Ambassador Hotel, Los Angeles. Contact: Wm. F. Roe, M.D., 14431 Hamlin St., Van Nuys, Calif.

COLLEGE OF MEDICAL EVANGELISTS SCHOOL OF MEDICINE Annual Alumni Postgraduate Convention. Refresher courses, White Memorial Hospital, March 10 and 11; Scientific Assembly, Biltmore Hotel, March 12 to 14, both in Los Angeles. Contact: Walter B. Crawford, managing director, Alumni Postgraduate Convention, 316 N. Bailey St., Los Angeles 33, or telephone: ANGelus 2-2173.

CHILDREN'S HOSPITAL, San Francisco postgraduate course on The Newborn, Nurses Auditorium, 3801 Sacramento Street, March 23. Contact: Medical Extension, University of California Medical Center, 2nd and Parnassus, San Francisco 22.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Tulare County Medical Society, March 28.†

CALIFORNIA TUBERCULOSIS AND HEALTH ASSOCIATION and the CALIFORNIA TRUDEAU SOCIETY Joint Annual Meeting, Hotel Statler, Los Angeles, March 28 to 30, 9 a.m. to 5 p.m. Contact: E. L. Daggett, Director, Public Information, 130 Hayes St., San Francisco 2, or telephone HEmlock 1-8771.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Los Angeles County Medical Association, March 31.‡

APRIL MEETINGS

LETTERMAN ARMY HOSPITAL "Surgery in Acute Trauma," 8 a.m. to 4:30 p.m., April 1 to 3.‡

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Marin County Medical Society, April 4.§

INTERNATIONAL COLLEGE OF SURGEONS, Regional Meeting, Las Vegas, Nevada, April 8 and 9. Contact: Ross V. Parks, M.D., 1930 Wilshire Blvd., Los Angeles 57.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Ventura County Medical Society, April 9.§

CALIFORNIA SOCIETY OF ANESTHESIOLOGISTS, Inc., Annual Meeting, Sun Valley, Idaho, April 9th. Contact: Francis E. Guinney, M.D., secretary, 2790 Monte Mar Terrace, Los Angeles 64.

‡ Contact: Major Max E. Knickerbocker, MSC, Chief of Education and Training Branch, Letterman Army Hospital, San Francisco.

§Contact: Walter E. Batchelder, M.D., Medical Director, Cancer Commission, Suite 816, 450 Sutter St., San Francisco.

UNITED STATES-MEXICO BORDER PUBLIC HEALTH ASSOCIATION Fifteenth Annual Meeting, April 9 to 12, San Antonio, Texas. *Contact:* Donald G. Davy, M.D., State Department of Public Health, 2151 Berkeley Way, Berkeley.

VALLEY CHILDREN'S HOSPITAL Spring Clinics, Roosevelt High Auditorium, Fresno, April 12-13. *Contact:* Valley Children's Hospital, Millbrook and Shields Avenue, Fresno.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Kern County Medical Society, April 16.[§]

SAN FRANCISCO HEART ASSOCIATION Nurses Institute on the Care of the Cardiac Patient, April 17 and 18, 8:30 a.m. to 5 p.m., San Francisco. *Contact:* Mr. Lawrence Kramer, Executive Director, San Francisco Heart Association, 604 Mission Street, San Francisco, or telephone: YUkon 2-5753.

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for San Luis Obispo County Medical Society, April 20.[§]

LETTERMAN ARMY HOSPITAL "Oral Surgery," 8 a.m. to 4:30 p.m., April 22 to 26.[‡]

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Merced County Medical Society, April 25.[§]

CALIFORNIA MEDICAL ASSOCIATION Annual Meeting, Ambassador Hotel, Los Angeles, April 28 to May 1. *Contact:* John Hunton, executive secretary, 450 Sutter St., San Francisco 8, or Ed Clancy, director of Public Relations, 417 S. Hill St., Los Angeles 13.

SUMMER AND FALL MEETINGS, 1957

CANCER COMMISSION, CALIFORNIA MEDICAL ASSOCIATION, Cancer Conference for Napa County Medical Society, May 8.[§]

CALIFORNIA HEART ASSOCIATION Annual Meeting Lafayette Hotel, San Diego, May 17, 18, and 19. *Contact:* J. Keith Thwaites, executive director, California Heart Association, 1428 Bush Street, San Francisco.

WESTERN BRANCH, AMERICAN PUBLIC HEALTH ASSOCIATION annual meeting, Lafayette Hotel, Long Beach, May 29 and June 2. *Contact:* Mrs. L. Amy Darter, Secretary-Treasurer, State Dept. Public Health, 2151 Berkeley Way, Berkeley.

CHILDREN'S HOSPITAL OF THE EAST BAY Pediatric Seminar and Clifford Sweet Lectures, June 7 to 8. Guest lecturer: Sydney S. Gellis, M.D., Boston. *Contact:* James Dennis, M.D., medical director, 5105 Dover St., Oakland 9.

STATE BOARD OF MEDICAL EXAMINERS Oral Examination, San Francisco, June 15.*

IDAHO STATE MEDICAL ASSOCIATION 65th Annual Meeting, Sun Valley, June 16 to 19. *Contact:* Mr. Armand L. Bird, executive secretary, 364 Sonna Bldg., Boise, Idaho.

STATE BOARD OF MEDICAL EXAMINERS Written Examination, San Francisco, June 17 to 20.

WYOMING STATE MEDICAL SOCIETY ROCKY MOUNTAIN MEDICAL CONFERENCE Annual Joint Meeting, Jackson Lake Lodge, Moran, Wyoming, June 16 to 19. *Contact:* H. L. Harvey, M.D., Casper, Wyoming.

COLORADO DIVISION, CANCER SOCIETY ROCKY MOUNTAIN Cancer Conference, 9 a.m., July 10 and 11, Shirley-Savoy Hotel, Denver. *Contact:* John S. Bouslog, M.D., Chairman, 835 Republic Bldg., Denver 2.

STATE BOARD OF MEDICAL EXAMINERS Oral Examination, Los Angeles, August 17.*

STATE BOARD OF MEDICAL EXAMINERS Written Examination, Los Angeles, August 19 to 22.

WASHINGTON STATE MEDICAL ASSOCIATION Annual Meeting, Olympic Hotel, Seattle, Washington, September 15 to 18. *Contact:* Mr. Ralph W. Neill, executive secretary, 1309 Seventh Ave., Seattle, Washington.

NEVADA STATE MEDICAL ASSOCIATION Annual Meeting, Las Vegas, September 25 to 28. *Contact:* Nelson B. Neff, executive secretary, P. O. Box 188, Reno.

SAN FRANCISCO HEART ASSOCIATION 28th Annual Post-graduate Symposium on Heart Disease, October 2 to 4, St. Francis Hotel, San Francisco. *Contact:* Lawrence I. Kramer, Jr., executive director, 604 Mission St., San Francisco.

FIRST WESTERN INDUSTRIAL HEALTH CONFERENCE, Biltmore Hotel, Los Angeles. October 4 to 6. *Contact:* E. J. Zaik, M.D., secretary, Western Industrial Medical Association, 740 South Olive Street, Los Angeles 14.

CALIFORNIA SOCIETY OF INTERNAL MEDICINE Annual Meeting, October 25 to 27, El Mirador, Palm Springs. *Contact:* Mrs. Mildred B. Coleman, assistant secretary, 350 Post St., San Francisco 8.

INFORMATION

Freedom in Medical Practice

DWIGHT H. MURRAY, M.D., Napa
President, American Medical Association

ALMOST SIX MONTHS have elapsed since we last met to deliberate and act on medical affairs. The time has passed quickly, but not quietly.

The rumble of war and revolution has resounded in our ears. The din from political battles has been deafening.

All of us . . . sooner or later . . . learn that today's events do not just swirl around us, but involve each of us. As doctors we cannot get away from them by claiming that our only interest is in the sick, and that we cannot be bothered by political, social and economic problems. These matters demand attention from the doctor as well as the lawyer, the businessman, the newspaper editor, the labor leader and the worker.

If we are concerned about what happens on the international, national and local fronts—and we should be—then certainly we cannot afford to be uninterested in what happens in our own area of health and medical affairs. Yet there is apathy in our ranks.

REPLACE APATHY WITH ACTIVE, UNITED PROFESSION

Today there is a greater need for a united, forceful and informed profession than ever before. We have been caught in the throes of a social revolution which demanded something for nothing. Changes have been taking place all around us, and medicine has not escaped unscathed.

For example, in a few days Public Law 569, the bill providing medical care for military dependents, becomes effective throughout the land. Contracts already have been signed with the government by the majority of our state societies. No longer can any doctor claim that this law does not affect him. No longer can he say that government laws really are not changing the practice of medicine.

Public law 880, better known to all of us as H.R. 7225, is another case in point. Medicine now is

Delivered at the opening session of the House of Delegates at the clinical meeting of the American Medical Association in Seattle, Washington, November 27, 1956.

facing the problem of protecting the taxpaying public from abuses and of cooperating with the government to carry out the provisions of the law. The law is now on the books, and we must provide the leadership necessary to make it work as well as possible.

It was encouraging to hear Ezra Taft Benson, secretary of agriculture, say last week before the American Association of Land Grant Colleges and Universities:

"Sooner or later, the accumulation of power in a central government leads to a loss of freedom. . . . Raids on the federal treasury can be all too readily accomplished by an organized few over the feeble protests of an apathetic majority. With more and more activity centered in the federal government, the relationship between the cost and the benefits of government programs becomes obscure. What follows is the voting of public money without having to accept direct local responsibility for higher taxes . . .

"If the present shift of power from state to federal authority which started 25 years ago is allowed to continue, the states may be left hollow shells."

It was encouraging to hear such comments from a member of the President's cabinet. I only wish that all members of the official family, and more important, every member of the United States Congress, felt the same way.

The expression of this philosophy, with which medicine so heartily agrees, sounds good, but putting it into practice is the thing we are really interested in.

Today the medical profession along with business and industry is caught between those who desire to promote sound government and those who desire even more intensely to perpetuate party power. Unfortunately, in recent years a benevolent federal government appears more attractive to the voting public than the preservation of individual freedom. Medicine must do its utmost to reverse this trend.

MEDICAL FREEDOM ESSENTIAL

In my travels around the country as your representative the last 18 months, I have seen little dissension or rancor within our ranks. However, I must report that I have seen too much complacency over governmental encroachment into medical affairs. And I am deadly serious when I say to you that apathy by the few, or by the many, can be detrimental to all.

No nation can merely reap the benefits of freedom; it also must sow seeds of freedom.

In medicine the situation is the same. If an apathetic medical profession takes its freedom for granted, it will be the beginning of the end. A

strong, free profession must work for freedom so that it may live in freedom. And history tells us that once medicine loses its freedom, other fields of private endeavor are immediately in danger.

I do not wish to paint a dark or distorted picture of medicine's free status and its stature in America today. But I do believe words of caution and an appeal for vigilance are in order.

The road of apathy and disunity can only lead to disorder and perhaps disintegration, and we must sound a warning to all our colleagues who don't care, or who are pulling in the opposite direction. The road of alertness, action and unity is the proper road for all of us to be traveling together.

If I had just one wish for the coming year, it would be to command the time and talents of the 160,000 physicians in the American Medical Association. I would set us all to the task of emphasizing and reemphasizing the absolute necessity of patient and professional freedom.

PATIENT'S RIGHT TO CHOOSE HIS DOCTOR

I believe it is one of our prime responsibilities to prove to our patients that their right to choose their doctor is a most important one.

Free choice brings a bond of confidence between doctor and patient which no compulsory medical system can create. It means that the patient knows the physician will be interested in him as a person, not as just a serial number of the 2:45 appendicitis case.

For the doctor free choice means that the patient has selected him for his abilities, training, sincerity and personality. When a patient comes into my office, I know he has made a choice. And from that moment there begins a physician-patient relationship of the highest order. To me the patient is someone special, and I in turn hope I am someone special to him.

Once the patient has made his choice, the physician automatically assumes an unqualified responsibility to the patient. No system of medical care that uses a third party to bring doctor and patient together can match our kind of cooperative performance for the treatment of illness, the cure of disease and the betterment of the patient's health.

Freedom to select a doctor is part of everyone's great freedom to choose—to choose what he wears and eats; where he works and worships, and how he votes. Take away any part of this freedom and great damage is done to our democratic system.

FREE CONDUCT IN MEDICAL TREATMENT

Another freedom closely tied to freedom of choice is freedom in the conduct of medical treatment.

At the recent meeting of the World Medical Association in Havana, Cuba, Dr. Rolf Schloegell of Germany made a stirring defense of free conduct of medical treatment. He told us that the medical profession believes the attending physician alone is competent to decide what measures he deems necessary and will apply in order to bring about the desired improvement. He warned too of the danger of excessive restriction on the freedom of the patient and the attending doctor.

Yet the trend toward extending social security in the medical care field has been steady and has accelerated since the end of World War II.

The dangers of shifting responsibilities for medical care from the patient and doctor to the government are obvious. The caliber of medical care cannot be as high when both patient and doctor are dependent upon government. Initiative succumbs to dictation, and self-reliance is replaced by the crutch of government.

We do not deny that there is an area of legitimate concern by the government for the health and welfare of the people. But each year government seems to extend that area. We get some idea of this expansion from the new federal medical budget.

This year, according to our Washington office, the average family will be paying \$54.61 for the U. S. government's health and medical activities. And the total expenditures this year amount to 2½ billion dollars—290 millions more than last year. Even in an over-all federal budget of 61 billion dollars, the total health cost of 2½ billions is not insignificant. It is a billion dollars more than the cost of running the Commerce Department, half a billion more than the Agriculture Department and six times more than the Interior Department's budget.

Many expenditures obviously are necessary to keep up our unsurpassed public health standards, and research may pay rich dividends in scientific discoveries. But there is no doubt that much money is being spent on medical activities that should not involve government participation.

The trend is to spend more and more government money on health and medical matters because it is good politics. Apparently many Americans still want to see government in the role of a big brother, dishing out so-called gifts and bargains under the guise of benevolent economic planning.

I believe it is our duty, as it is everyone else's, to combat the attitude of "what's in it for me?" and to promote the long-honored creed of "what's best for all Americans and our free society?" I think that a nation can drift into state medicine inch by inch just as surely as if the scheme were foisted upon a

people overnight. The "drift" method may take longer but the result will be the same.

So it is time all of us sounded the alarm against soft and superficial security and against the invasion of personal responsibility. It is time we stood up together for militant freedom and for full rights and responsibilities of the individual.

BELGIAN DOCTORS TURN BACK GOVERNMENT

There is no better example of what a unified medical profession can do than in the story of the recent fight of the Belgian doctors against the government's proposals for a state service of medicine.

Without consulting the medical profession the Belgian government proceeded to draft rules and regulations of health to be incorporated in the nation's social security legislation. Under the proposals doctors were to sign an agreement to abide by the present rules and any later regulations. For the patient there would be the usual red tape in getting medical care.

When the Belgian doctors learned of the scheme, they met in conference with the government. They told the government what they wanted and what they would not accept. The government agreed.

For several months everything was quiet. Then the Belgian doctors suddenly read about the new health bill that the government was sending to Parliament. It was quite contrary to the earlier agreement worked out by the profession and the government. But the bill was passed quickly.

The Belgian medical profession protested and said it would not be placed under the Ministry of Labor. Instead the doctors proposed to set up their own plan of medical assistance.

Before long, the government saw that the medical profession meant business and that the doctor's plan was an attractive one. So it declared that its own bill was not in force and could not be in force without the consent of the medical profession.

To me this fight against legislative intervention in medical care is excellent evidence that the profession can defend itself if it unites to defend the basic principles of freedom and if it offers constructive proposals. By using the Belgian national motto, "in union there is strength," the medical profession showed doctors everywhere that dangerous government plans can be turned aside by the strong.

I also read recently in the *Journal of the World Medical Association* of the fight of the medical profession of Malta against a British government

scheme to introduce a full-time salaried medical service, without the right of private practice, on the island dependency of Malta. Here again the doctors reacted with unity and strength, and successfully thwarted the government's plan.

There is a lesson in these stories from Belgium and Malta. They prove that a unified profession has a great political power for good—the good of the patient, the doctors and the nation.

CONFIDENCE AND UNDERSTANDING NEEDED

While we are developing unity within our own ranks, I believe it is equally important to continue to build up the confidence and respect of our patients and to make our legislators aware of the necessity for freedom in medical practice.

Let us never reduce the quality of service we render to our patients, and never lose the personal touch in medicine. Where there is any opportunity to improve upon our medical care, let us seize it and show our abilities to do an outstanding job. Satisfied patient-customers will give us deserving support when we need it.

We also should realize that the destiny of medicine can be determined to a large degree in the halls of Congress. If this be true, then it is even more important that we take an even greater interest in those who elect the Congressmen. Sympathetic understanding of our position by federal legislators through the voting public will be an insurmountable deterrent to the forces supporting state medicine.

The day has come, gentlemen, when we can no longer look upon medical economics and social changes merely as issues to be considered during our limited leisure hours. Our interest in them cannot be superficial or intermittent.

We now must pay daily attention to these matters. Medical socioeconomic affairs can no longer be just incidental with us. They must be a vital part of our life and of our profession.

Each of us, I believe, should dedicate himself to the words included in the oath of office taken by presidents of the A.M.A.

"I shall champion the cause of freedom in medical practice and freedom for all my fellow Americans."

As doctors, representatives to the A.M.A. and as spokesmen for the A.M.A., let's remember these words and live by them. And to alter a phrase of President Lincoln's only slightly: Let's make common cause to keep the good ship of medical freedom on this voyage, or nobody will have a chance to pilot her on another voyage.

Family Polio Vaccination in California in Mid-1956

IN MID-1956 the California State Department of Public Health conducted a statewide household sample survey in part for the purpose of collecting information on the poliomyelitis vaccination history of each household member and the attitude of the mother toward poliomyelitis vaccine. In an analysis of this information, these data are related to the social and economic characteristics of each household.

The sample included some 3,500 households, containing about 11,000 persons, or about one household out of every 1,200 in the state. Although information on poliomyelitis vaccine was collected from the entire sample, the tabulations reported by the department in an unpublished manuscript* are restricted to persons 0 to 14 years of age, a group to which the vaccine had been available from either private physicians or public clinics for about eight months before the survey. The sample contained 3,342 children under 15 years of age.

Preliminary analysis of the survey data taken in mid-1956 reveals that:

1. Forty-two per cent of the 3,342 children under 15 years had received their first poliomyelitis vaccination; 58 per cent had not been vaccinated against poliomyelitis.

2. Poliomyelitis vaccine was favorably regarded by 81 per cent of the mothers of children under 15. For mothers of children who had been vaccinated, 97 per cent were favorable, 2 per cent neutral and 1 per cent unfavorable. For mothers of children who

had not been vaccinated, 65 per cent were favorable, 11 per cent were neutral and 22 per cent were unfavorable.

3. The most frequent reason for nonvaccination given by mothers favorable toward the vaccine was that the injections were not offered their children in school, or their doctors did not tell them the vaccine was available. The second most frequent reason was that of a simple lack of motivation; the mother just had not gotten around to it or had not thought about it.

4. Children who were vaccinated tended to come from white families in the higher income brackets, having 2 to 4 children. They also tended to have mothers with 12 or more years of education and/or fathers in white collar occupations. In families earning less than \$2,000, 83 per cent of the children under 15 had not been vaccinated, as compared with 47 per cent who had not been vaccinated in families earning more than \$8,000.

5. Private physicians vaccinated one per cent of the children from families having less than \$2,000 annual income, but 34 per cent of the children from families having incomes of \$8,000 or greater.

6. Comparatively few children from households having more than 3 children in the 0 to 14 age group were vaccinated in physicians' offices.

The State Department of Public Health emphasizes that there is still a high percentage of nonvaccination among some of the age groups most susceptible to poliomyelitis, and concludes that persons in these age groups who will be most resistant to obtaining immunization will probably be socio-economically similar to the nonvaccinated population found in the survey.

*Being submitted to Public Health Reports for publication.



THE PHYSICIAN'S *Bookshelf*

HOW TO REDUCE SURELY AND SAFELY—Herbert Pollack, M.D., McGraw-Hill Book Company, Inc., New York, 1955. 157 pages, \$2.95.

With the current fad for losing weight in full swing, any "How To" book with the word "Reduce" or "Diet" in it stands a good chance of getting on the best-seller list today. Unfortunately, too many of the books which are published are written by quacks and fakes. Such is not the case with the author of "How To Reduce Surely and Safely." Dr. Pollack writes with far more soundness than most of the health-fad writers. He has an excellent chapter which points up the fallacies of diet fads and fakes. There are also appendices which list calorie values and low-calorie menus.

However, he sometimes falls into the very pitfalls for which he rightfully criticizes the quack, and he writes too much in their style, with an assumption of exactness that is often unjustified. He has a pet phraseology, with repetition of such phrases as "Your Safe and Sure Diet," which is rather offensive to the medical reader. He describes as gospel certain probabilities such as "If you weigh 10 per cent less than your desirable weight you are underweight." On page 53 he states with pontifical authority, "You should consume one-fourth to one-third of your total calories at breakfast. Otherwise fatigue, irritability, dizziness, nausea and headache can take over about midmorning." And, immediately after that he would dispel wide-spread myths about breakfast. He includes diets up to 3,000 calories in his reducing diets—originally based on an assumption that every individual is like every other individual in his utilization of energy—except that he falls into a rigid classification of light workers vs. heavy and moderately heavy workers (pages 58 and 59).

The book concerns physicians only as reading which may be of interest to his patients. On the whole it can be recommended as a handy little book which is better than most as a self-service guide to reduction of weight.

* * *

CARDIAC PRESSURES AND PULSES—A Manual of Right and Left Heart Catheterization—Aldo A. Luisada, M.D., Associate Professor of Medicine; and Chi Kong Liu, M.D., Instructor of Medicine; both of The Chicago Medical School, Grune & Stratton, Inc., New York, 1956. 116 pages, \$6.00.

After a brief introductory chapter on the events of the cardiac cycle the authors discuss the technic of cardiac catheterization, normal pressure patterns of the heart and great vessels, abnormal pressure patterns and artifacts. A concluding chapter presents formulas commonly employed in the calculations of blood flow, shunts, resistances and valve areas. A brief bibliography and an adequate index has been prepared.

However, the monograph is generally disappointing. Despite the publisher's advertisements stating that it reflects the authors' "extensive experience with cardiac catheterization," the material presented is limited. Much of the data

has been obtained from the literature, many pressure curves from dogs are illustrated, diagrams are used where actual pressure curves would serve better, and human material is scanty. For example, their data on the normal pressure curves is derived from studies on only 7 humans and 6 dogs. Only one pressure tracing from the left atrium of the human subject is presented. The published tracings will be unfamiliar to most workers since heart sounds without simultaneous electrocardiograms are used for identification of pressure curves and pressure measurements are not indicated. Many will disagree with the authors' contention that a photographic recorder tracing simultaneous reference heart sounds is superior to a direct writer with a reference electrocardiogram for pressure recordings. Despite the authors' discussion of artifacts many of their tracings are seriously damped and should not have been published. The discussion of the events of the cardiac cycle is excellent and provides a proper introduction to any volume on pressure pulses. There is a distinct need for a monograph on this subject. This volume only partially fulfills that need and workers in the field must still turn to published papers and their own files for information on the normal and abnormal pressure pulses.

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CHRISTOPHER'S TEXTBOOK OF SURGERY—Sixth Edition—Edited by Loyal Davis, M.D., Chairman of the Department of Surgery, Northwestern University Medical School. W. B. Saunders Company, Philadelphia, 1956. 1484 pages, 1359 illustrations on 716 figures, \$15.50.

Dr. Loyal Davis and 86 other distinguished authorities have revised the long-famous Christopher's Textbook of Surgery. For the new sixth edition the work has been completely reorganized and almost all chapters have been completely rewritten in an effort to bring the material up-to-date and along more practical lines. Every common surgical disease is considered under etiology, pathology, clinical course, diagnosis, treatment, techniques, pre and postoperative care, complications and prognosis. The factual content of the book is tremendous.

The book suffers from the same disadvantages as its predecessors, however, for it is too long and complicated for the student, yet inadequate for the practicing clinician, for its emphasis is as a standard textbook. The integration of the material is rather well-done, but it is difficult to unify into one work the concepts of 86 different contributors, each anxious to completely develop his chosen field of discussion.

New material predominates throughout the book. The vascular system, endocrine system, chemotherapy, treatment of soft tissue injuries and burns, preoperative and postoperative care are discussed in a thoroughly modern fashion, differing from many other books. The illustrations are new and good, and have been carefully selected.

This is a good standard textbook of surgery, and can be recommended for students ultimately headed into surgery, general practitioners with a surgical interest, and surgeons.

THE MORPHOLOGY OF HUMAN BLOOD CELLS—L. W. Diggs, M.A., M.D., Professor of Medicine and Director of Medical Laboratories, University of Tennessee; Dorothy Sturm, Instructor, Memphis Academy of Arts; and Ann Bell, B.A., Instructor in Medicine, University of Tennessee. W. B. Saunders Company, Philadelphia, 1956. 181 pages, 31 color plates, 54 figures, \$12.00.

This book is in two sections. The first is a series of 30 pages of color illustrations, and the second is a hundred pages of text, black and white and color illustrations, diagrams and photographs. The newly adopted hematologic nomenclature is employed together with common synonyms.

The water color illustrations by Dorothy Sturm are very good. They were originally published by the Abbott Laboratories in *What's New* and later as a monograph. One of the best features is the section with plates and text on the fixed tissue cells of the bone marrow and miscellaneous pathologic cells. This material is hard to find elsewhere in one volume.

The main defect (as in photomicrography) is in reproducing nuclear detail. The nucleus of the hypochromic microcytic rubriblast looks more like a P.A. type than the one illustrated. The nuclei of the monocytic series appear diagrammatic and are not too good. The test of a good picture is its being identified without recourse to the text. There is no atlas, photographic or otherwise, which meets this test. Despite any shortcomings of the illustrations, with the use of the text, one gets as good an idea of morphology from this book as is available from the printed page.

The text is complete but very readable. There is a small section on technique. The beginner may take encouragement in learning that every cell cannot be classified, and one must frequently identify a cell by the company it keeps.

The book is printed on fine quality paper and the workmanship is excellent. The pages are bound in metal rings so that the book opens flat.

Of the atlases and books on morphology of blood cells published in the past decade, this is one of the best. It will find great favor with medical students, laboratory technicians, general physicians, pathologists and hematologists. It is highly recommended.

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ORGANIZED HOME MEDICAL CARE IN NEW YORK CITY—A Study of Nineteen Programs by the Hospital Council of Greater New York. Published for the Commonwealth Fund, by Harvard University Press, Cambridge, Mass., 1956. 538 pages, \$8.00.

This work is an evaluation of the organized plans existing in New York City for extending comprehensive medical care to the long-term patient in his home. The volume reports in full a study of the nineteen experimental plans in New York City by the Hospital Council of Greater New York City. The report points out that the patient with chronic illness is often beset by social, economic, emotional and domestic problems and that, to the patient, these problems may be as great as the illness itself. To provide comprehensive medical care to patients with such complex problems requires a dynamic plan of management with the home, the outpatient department, the hospital and other institutions being utilized when specifically indicated. Home care, therefore, is actually only one modality to be employed when appropriate for those patients whose care is better provided in his familiar home surroundings. It is not a substitute for hospital care nor is its purpose to reduce hospital bed occupancy. As an additional facility, it broadens the scope of available medical services in a community.

The report analyzes the kinds of patients served by home care programs, their diagnoses, and even their comments on the services rendered. It compares the different programs and considers in detail the problems of personnel and ad-

ministration, the relation of home care to hospital care, and the costs involved. It sets forth the recommendations of the Hospital Council for a complete home care program as well as specific plans for a more complete home care plan for New York City.

This book will serve as a valuable reference and resource book for those interested in this subject. The recommendations as well as the data contained in the volume will be of great interest to all of those who are concerned with the planning, organization or administration of home care programs throughout the country.

* * *

A MANUAL OF THE COMMON CONTAGIOUS DISEASES—Fifth Edition, Thoroughly Revised—Philip Moen Stimson, A.B., M.D., Professor of Clinical Pediatrics, Cornell University Medical College; and Horace Louis Hodes, A.B., M.D., Clinical Professor of Pediatrics, Columbia University College of Physicians and Surgeons. Lea & Febiger, Philadelphia, 1956. 624 pages, 84 illustrations and 10 plates, 8 in color, \$8.50.

This book will be of great value to any physician who must concern himself with the care of communicable disease. The relative infrequency of many of these diseases at the present time, especially in hospital practice, makes it necessary for much of the instruction of medical students to be largely didactic and for the average physician to depend on a minimum of personal experience. The breadth of their own experience in this field has enabled the authors to present vivid descriptions of these entities in a most informative manner.

Diagnostic criteria, differential diagnosis, essential laboratory procedures, and details of management are presented with admirable clarity and readability. The information is explicit without being dogmatic. There is the refreshing absence of carry-over of traditional concepts which are so frequently carried on from one text to another.

Details of laboratory advances in this field—virology, bacteriology, serology and pathology—are up to date to the very moment of publication.

The discussion of therapeutic preparations, vaccines, serums, antibiotics, corticosteroids will be extremely useful beyond the scope of the purely contact infections. The writers have not hesitated to abandon methods of treatment which they believe to be of little practical or theoretical value simply because these may have been endlessly proposed in the past.

Suggestions for the management of these diseases in the general hospital, the communicable disease unit, and in the home are of great practical value and in many respects depart from many of the meaningless and cumbersome methods sometimes proposed and which fail because of their very intricacy of performance.

Scarlet fever is discussed in combination with the streptococcal diseases, the meningitides are dealt with as a group, poliomyelitis is detailed in a manner which is astonishing in so small a volume.

This book has a place in every hospital library as well as in the hands of every physician who has any interest in the subject matters.

* * *

PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION—Patterns and Techniques—Margaret Knott, B.S., Head Physical Therapist; and Dorothy E. Boss, B.Ed., Assistant Head Physical Therapist, California Rehabilitation Center, Vallejo. Paul B. Hoeber, Inc., 49 East 33rd Street, New York 16, N. Y., 1956. 135 pages, \$5.50.

This is essentially a technical manual for physical therapists. As such it seems quite competently written with explicit directions for a variety of exercises. The neurophysiological concepts on which the rationale of these exercises is supposed to be based cannot claim universal or even general acceptance, but this does not detract from the practical value of the book for the physical therapy technician.

ANNUAL REVIEW OF MEDICINE—Volume 7—1956—David A. Ryland, Editor and William Creger, Associated Editor, both from Stanford University School of Medicine. Annual Reviews, Inc., Stanford, Calif., 1956. 611 pages, \$7.00.

The reviewer is favorably impressed by volume 7 of the Annual Review of Medicine even as he was by volume 6 which appeared in 1955. The different sections are written by authors who have provided thoughtful and useful reviews of important advances in selected areas of medical knowledge. Although the average physician may not keep this volume in his own library, it can be highly useful as a point of departure whenever he wishes to look up recent literature on a given subject. The subjects are not covered in complete detail, but in a responsible and broad enough way to make developments readily available.

In spite of this, this group of abstracts, as others, falls behind in one important respect: Their most recent literature is one or more years old before it can possibly reach the reader; e.g., in the case of this volume, which arrived for review at the end of June 1956, the articles included only literature published prior to a date varying from March to October 1955.

CLINICAL UNIPOLAR ELECTROCARDIOGRAPHY—Third Edition—Bernard S. Lipman, M.D., Instructor in Medicine, Emory University School of Medicine and Edward Massie, M.D., Associate Professor of Clinical Medicine, Washington University School of Medicine. The Year Book Publishers, Inc., 200 East Illinois St., Chicago, 1956. 397 pages, \$7.50.

As in the past, the third edition of this book remains an eloquent introduction to the field of electrocardiology. In simple didactic language and diagrams, it illustrates the genesis of the various patterns encountered in electrocardiography. However, in any compilation of data, certain errors are noted. For example, under interarterial septal defects of the secundum type, the author states the electrocardiographic changes are indefinite, whereas most of these patients have electrocardiograms which show incomplete or complete right bundle branch block. The importance of the ventricular activation time in V_1 in infants is omitted. Some of the electrocardiograms are subject to different interpretations. However, this book remains an excellent introductory study for the beginner in electrocardiography.

LYSERGIC ACID DIETHYLAMIDE AND Mescaline IN EXPERIMENTAL PSYCHIATRY—Proceedings of the Round Table, American Psychiatric Association, 1955—Edited by Louis Cholden, M.D., Chairman, Assistant Clinical Professor of Psychiatry, UCLA School of Medicine. Grune & Stratton, New York, 1956. 85 pages, \$3.00.

This is a small book of 85 pages which give "The Proceedings of the Round Table on Lysergic Acid Diethylamide and Mescaline in Experimental Psychiatry, held at the annual meeting of the American Psychiatric Association, May 12, 1955." Twelve different speakers participated, following which there were questions and discussion by the audience, followed by answers and final statements by the members of the panel.

Psychiatry has been greatly interested in drugs that seem to artificially reproduce a specific type of mental disorder, and recently there has been a great deal of study and research on a number of such drugs, particularly those that produce a schizophrenic-like reaction. It is felt by many that if one artificially produces such reactions by these various drugs and then studies in great detail what occurs we will get some real understanding of what schizophrenia is. The papers presented deal mainly with LSD-25, Frenquel and Mescaline. The different papers may discuss one of these drugs from a pharmacological or psychiatric point of view. One paper discusses the use of lysergic acid in the treatment

of mental disorders. There is a five-page discussion of Mescaline and the "Other World," by Aldous Huxley, who participated in this discussion. Most of the other contributors are psychiatrists. The book can be recommended for any one who wishes to read about these newer drugs that produce psychotic-like reactions.

THE MANAGEMENT OF FRACTURES, DISLOCATIONS AND SPRAINS—Sixth Edition—John Albert Key, B.S., M.D., Clinical Professor Emeritus of Orthopedic Surgery, Washington University School of Medicine, St. Louis; and H. Earle Conwell, M.D., Associate Professor of Orthopedic Surgery, University of Alabama School of Medicine, Birmingham. The C. V. Mosby Company, St. Louis, 1956. 1168 pages, \$20.00.

The sixth edition of this old standard American Text on the Treatment of Fractures is a further improvement upon its predecessors. This has been a standard work in its field since 1934. Its format has not changed, simply the material has been altered and illustrations changed in many respects.

The section having to do with compound injuries and treatment of infections has been altered appreciably and definitely improved in this new edition.

The section having to do with treatment of fractures of the forearm has been altered and improved also. It is to be regretted that the old illustrations are still used in the current text, however, demonstrating the use of wire loop fixation for fractures of the forearm.

The section on fractures of the hand has been appreciably improved by changes in the text to conform to the later techniques and thinking of treatment of these injuries from a functional, rather than an x-ray, viewpoint.

The section on fractures of the hip, particularly dealing with the reconstructive procedures and with the fracture dislocations of the acetabulum, has also been altered to improve the quality of the work generally.

This book has always been noted for its conservative approach and the sixth edition reflects further credit to the authors in continuing their conservative approach, but showing their own excellent judgment in including the newer techniques which have proved to be of value. The book has been very worth while in the past years, since its original publication, the sixth edition has sufficient improvement to increase its value and stature both.

EPILEPTIC SEIZURES—A Correlative Study of Historical Diagnostic, Therapeutic, Educational, and Employment Aspects of Epilepsy—John R. Green, M.D., and Harry F. Steelman, M.D., The Williams and Wilkins Company, Baltimore, 1956. 165 pages, \$5.00.

This short volume of 160 pages is made up of a group of papers given at a joint meeting of the Western Institute of Epilepsy, the Western EEG Society and the American Academy of General Practice, Arizona Chapter held in Phoenix, Arizona, in 1955. It is divided into four parts: (1) The diagnosis of epileptic seizures, (2) the treatment of epileptic seizures, (3) education of the epileptic patient, and (4) employment and rehabilitation aspects. The different chapters vary a great deal in method of presentation as would be expected with the variety of workers involved. Dr. Wilder Penfield has contributed several chapters setting forth its particular outlook on epilepsy. There is no question but that all subjects presented can be found in better form elsewhere. On the other hand the particular choice of topics has been very good so that the subject of epilepsy has been covered quite adequately. For this reason, the book can be recommended to the general practitioner who cares for some epileptics in his practice and can probably be recommended to the families of patients who have epilepsy. In the latter regard, the only word of caution lies in the rather optimistic presentation of the surgical treatment of this condition resulting from the undue proportion of surgical authorship.

DISEASES OF THE BREAST—C. D. Haagensen, M.D., Professor of Clinical Surgery, The College of Physicians and Surgeons, Columbia University. W. B. Saunders Company, Philadelphia, 1956. 751 pages, 404 figures and 25 charts, \$16.00.

This handsome textbook is an exhaustive review of the anatomy, physiology, physical examination and diseases of the breast based on the long experience of the author and of the accumulated data at the Columbia-Presbyterian Medical Center in New York during the interval 1915 to 1955. The book will be of considerable value to those who have a special interest in diseases of the breast because of the wealth of statistical data which is included and the thoroughness with which the literature has been reviewed, resulting in a bibliography which has not been equaled in any recent textbook. Chapters of particular value to those who are interested in highly detailed knowledge of the breast are those sections of the book which deal with the more esoteric diseases of the breast. There are also admirable chapters on the natural history of breast carcinoma, as well as a good discussion of special pathological forms of carcinoma of the breast.

Unfortunately the reviewer cannot recommend the text either for use by medical students or for those who have something less than a professional obsession with the subject of carcinoma of the breast. A textbook of 751 pages on diseases of the breast is obviously too prolix for general use. In addition, in spite of his wide knowledge of the natural history of carcinoma of the breast, the author has developed some obsessive convictions concerning the management of mammary carcinoma which are in sharp contrast to the teaching and practice in most medical centers. Doctor Haagensen is now advocating still further restrictions in his definition of operability, in an unrealistic attempt to limit radical mastectomy to those women who are genuinely curable. In addition to the rather exacting criteria previously published by Haagensen and Stout, the author is now doing a "triple biopsy" as a preoperative measure, obtaining nodes from the supraclavicular area, internal mammary chain and the apex of the axilla. If any of the nodes so obtained show metastasis the patient is considered inoperable. Although the author is extremely concerned about a delicate approach to the tumor of the breast which may be cancer, and is severe in his criticism of needle biopsy, he seems to disregard entirely these admonitions when he invades the operative field in the axillary apex and disrupts lymphatics in the internal mammary chain. It also seems obvious that such a progressive contraction of the indications for radical mastectomy will deny the palliative benefits of the operation for many women, even though they succumb in later years to the disease after remote metastasis becomes evident.

The author also continues to insist upon the alleged value of extremely thin skin flaps far beyond the site of the primary lesion, of the necessity of routine skin grafting and his belief that the operative time is a measure of the excellence of the procedure. The fact that Haagensen himself reports an incidence of local recurrence of 12 per cent following radical mastectomy seems to refute effectively the technical considerations which he so enthusiastically advocates.

PHYSICAL DIAGNOSIS—Fifth Edition—Ralph H. Major, M.D., Professor of Medicine and of the History of Medicine and Mahlon H. Delp, M.D., Professor of Medicine; both from the University of Kansas. W. B. Saunders Company, Philadelphia, 1956. 358 pages, 536 figures, \$7.00.

This has been a successful text for teaching physical diagnosis to beginning medical students since the first edition appeared in 1937, and it will serve that purpose very well for quite a few years to come. The authors emphasize the importance of many things which are too infrequently emphasized. For instance, in their chapter on General Inspection,

page 31, one finds "It is important that the patient be comfortable, but is equally important that the examiner be in a comfortable position." The chapter on Pain is selectively done and necessarily incomplete. One can wonder at its inclusion in a text devoted solely to physical diagnosis but one then realizes that the authors are attempting to include information on history as well as examination.

The reviewer objects to the term "vital signs" for the weight, height, temperature, pulse, respiration and blood pressure. He feels that these should be labeled simply as a part of the general examination and that they are no more "vital" than any of a dozen other signs.

As much as any text book we know, this book may be termed a "period piece," evocative of the good old days before scientific medicine began to displace the entertaining anecdotal literature that was the vogue in all good medical text books. It contains many clichés, anecdotes, epigrams. Above all its tone is set by its 500 odd illustrations packed into 328 pages. Here one may see a wide variety of pictures old and new—historical horror shots, ulcers and tumors, deformities of all kinds and exaggerations of disease conditions. Such a book is not often exhaustive but is more interesting than most. And, as such, it may be recommended for the teaching of physical diagnosis.

EPILEPSY AND THE LAW—A Proposal for Legal Reform in the Light of Medical Progress—Roscoe L. Burrow, Dean, University of Cincinnati College of Law, and Howard D. Fabing, M.D., Chairman, Legislation Committee, American League Against Epilepsy, Past-President, American Academy of Neurology. Hoeber-Harper, Paul E. Hoeber, Inc., 48 East 33rd St., New York 16, N. Y., 1956. 177 pages, \$5.50.

The avowed purpose of this book is a partisan one to secure repeal of legislation unfavorable to the epileptic. As would be expected with such an approach, both sides of the question are not adequately represented. I am sure it will appeal to anyone in whose family there is an epileptic patient. There can be no doubt that some laws requiring sterilization of epileptics and prohibiting their marriages are obsolete and not based on sound clinical concepts. The criticism that the required reporting of epileptics to the Motor Vehicle Department drives epilepsy underground is well taken. It is not quite clear, however, how people with frequent seizures could be kept off the roads were this not required. The problem of the epileptic in industry is well presented with some practical suggestions as to limited liability of the employer which might well be put into effect. The book serves a useful purpose in providing factual data albeit somewhat biased in presentation for those interested in securing more favorable legislation for the epileptic. Certainly any move to take from the books laws which are out-moded and which are undoubtedly not enforced is a step in the right direction.

STUDIES IN TOPECTOMY—Edited by Nolan D. C. Lewis, M.D., Carney Landis, Ph.D., D.Sc., and H. E. King, Ph.D. Grune and Stratton, New York, 1956. 248 pages, \$6.75.

The contents of this monograph which deals with the effects of the loss of various portions of frontal brain on behavior and bodily function in human beings consists of a series of studies constituting the report of the activities of the New York State Associates in Brain Research between June 1948 and April 1949. The material is treated from the standpoint of the surgical technique, neurophysiological studies, and psychological effects. With the waning popularity of psychosurgery, it is unlikely that in the future such a considerable amount of material will again be available for study, and thus this monograph has great value for the psychiatrist and the psychologist as well as for the neurophysiologist.